UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

PROGRAM U. S. RADIO FARM SCHOOL First RELEASE Mon.Nov. 1

SHORT COURSE: "Livestock Breeding."

LECTURE NO. 5: "Mule Production."

ANNOUNCEMENT: Our station schoolmaster, who conducts Uncle Sam's Farm Radio School, has taken for his first subject tonight -- the mule. These lessons come to us from the U. S. Department of Agriculture at Washington, from where printed material supplementing radio talks is mailed to all enrolled students. If you have not yet registered send us your name at once.

* * *

The subject of our lesson tonight is the mule.

It is a subject that has been much discussed.

Also much cussed.

But many mule-drivers swear by as well as at their mules.

They say these animals can do more work than horses --- and do it on less feed. Mules, they claim, are less subject to disease, lameness, and digestive troubles --- and live longer and need less attention.

Trying to prove this is what starts a lot of the discussion.

It is certainly true, however, that mules on the average live longer than horses. They are also used in sections where climatic conditions are most severe, feed less abundant, and horsemanship not a highly developed art.

While horse production has shown a decline in recent years, the number of mules has increased. On the farms and ranches of the United States there are now 5,780,000 mules. The largest numbers are used in the Cotton Belt States. Texas alone has about 1,000,000 mules. The leading mule-owning States outside the Cotton Belt are Missouri, Tennessee, Kansas, and Kentucky.

But there are mules and mules. The largest are used mostly for heavy city teaming, construction jobs, railroad and lumber work. Five to 8 year old drafters are most in demand. Then there are the big, rangy sugar mules used mostly on the southern sugar plantations. Next in size, come the farm mules. Often they are worked for a season on the farm, developed, and then shipped to the market as drafters. Then there are the smaller cotton mules, which cotton plantations generally buy as 5 to 7 year olds, work for the crop season, and then dispose of.

The smallest-type mules are mine mules. The smaller of these are used for work underground and must have good feet and legs and be fee from blemishes if they are to bring the top prices. ----

Only the other day, a young man told me he was going in for mule breeding and asked my advice about the selection of stock.

"You're certainly preparing to follow in distinguished footsteps," I said, "George Washington was one of our first mule breeders. Henry Clay was also a prominent mule breeder.---

"Well," I continued, "you know the mule gets its bray, disposition, ears, tail, and feet from its daddy. Otherwise it should resemble its mother's side of the house as closely as possible."

"Yes, I know that," he replied, "but how about the points to look for in choosing breeders."

"A good jack," I explained, "should be at least 15 hands high. He should have a straight, strong back; a closely coupled and well-muscled loin; a long level rump; deep body; and well-spring ribs. His legs should be straight, well-muscled, and heavily boned."

"How about the points he shouldn't have"? the young man asked.

"In selecting a jack," I told him, "You want to avoid picking one with a flat, narrow chest; light-muscled loins, long coupling; short, steep rump; long legs; small feet with contracted heels; and short or droopy ears."

"And the mares? --" he suggested inquiringly.

"When choosing mares for mule production," I advised him, "use the same care you would in selecting brood mares to raise horses."

"What type?" he insisted, evidently not satisfied with any general statement.

"A very desirable mule mare," I said, "is one with about one-quarter draft blood. That kind will ordinarily produce good-sized mules, with style, action, and stamina. She should have a broad chest, large heart girth, roomy barrel, straight back, and strongly muscled loin. She should also have broad, flat, sound bone and large, well-shaped feet."

I advised him to write to the Department of Agriculture for information about mating and about the care of mares and foals so he would have it handy to consult when he needed it.

I cautioned him that jacks are lazy and need plenty of exercise to keep them in condition. They shouldn't be fed much corn or other fattening feeds. Wheat bran, oats, crushed barley and linseed oil meal make fine concentrates, I told him. Sheaf oats and green feeds may also be used.

The ration of the in-foal mare, I explained further, should contain a variety of feeds and be enough for work, the development of the foal, and to supply her own body needs. A clean good-quality mixture of legume and timothy hay can well be used with the grain feeds I mentioned for the jack. Be very careful, I said, and don't feed the mare moldy or damaged hay or fattening feeds.

That also applies to all you other mule breeders. Another thing,--- remember the first year is the most critical in a mule's life. The young mules like company and do better when several are put in a pasture together.

Next week we will take up some of the problems in swine breeding. Right now, however, let's talk some more about feeding-- not feeding swine or horses -- but feeding beef cattle.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

U. S. RADIO FARM SCHOOL Second Mon., Nov. 1

PROGRAM RELEASE

SHORT COURSE: "Livestock Feeding."

LECTURE NO. 5: "Feeding Beef Cattle"

ANNOUNCEMENT: We're going to spend the next few minutes talking "Beef Cattle," particularly, the feeding end of the business. Before we put our "schoolmaster" back on the job again we urge every farmer attending the U. S. Farm Radio School to request an enrollment blank and become eligible to receive the valuable printed lessons supplied by the U. S. Department of Agriculture, which is sponsoring this school.

* * *

I was in the Court House the other day -- you know how farmers will gather around there --- especially on court day. Well, sir, just outside the sheriff's office, there was the biggest kind of an argument going on.

I just moseyed over to see what it was all about. They were discussing the oldest big business in the world -- that is, they were talking beef-cattle feeding.

Ever since Abraham & Lot dissolved partnership on account of the overcrowded range, that's been a live subject. Of course, everybody recognizes that you can't produce beef profitably without plenty of good grass. The beef business is built on grass.

And I guess that in wintering beef cattle it's pretty well agreed that roughages should be largely depended on. But from what I picked up of that argument there are a good many points in cattle feeding that some folks don't know-- especially about feeding beef over winter.

For instance, some fellows don't seem to recognize that liberal feeding is good health insurance for their animals. Cattle in thrifty condition are better able to ward off diseases. Of course, a serious lack of feed will injure any animal -- but with purebred herds it's especially important to keep them thrifty. Then young stock need liberal feeding to develop properly.

Proper feeding means feeding stock according to their needs.

Growing cattle should receive more protein in proportion to carbohydrates than mature cattle. They need feeds that stimulate growth -- that is, those that are rich in protein. You can supply it to them in the form of legume hay or in such concentrated feeds as linseed meal, cottonseed meal, or other similar meals.

Fattening animals, of course, need fattening feeds or feeds having a high percentage of carbohydrates, such as corn and barley.

In wintering beef cattle it is good practice to at least maintain the weight of the animal.

Growing animals, however, should be fed so as to gain considerably during the winter. Steers when roughed through the winter should gain 50 to 75 pounds.

But you don't want to overdo the feeding for winter gains. Cattle making the largest gains in winter gain the least on grass the following summer. Therefore, you want to feed so as to get the biggest gains on grass.

And speaking of grass, reminds me that home-grown feeds are generally the most economical. They should form the basic part of rations for beef cattle. But in case you don't grow any legume hay, the home-grown feeds should be supplemented with protein concentrates.

In buying the protein concentrate, find out the per cent of protein in the meal as well as the cost per ton. Then buy the feed that will supply a pound of protein the cheapest.

When you are fattening cattle for slaughter, the cost of the feed in proportion to the gains made is the vital factor.

You beef cattle men who were hit by the drought last summer, don't need to be told that it always is a good plan to have a reserve feed supply. Silage is a good feed to replace grass in the summer when grazing is short as well as one of the most valuable roughages for use in the wintering ration.

In the range areas where roughage is scarce, cottonseed cake is a popular feed.

Another point to be remembered is that practical equipment and shelter contribute to the saving of feed.

But in all your feeding feed your beef cattle according to their needs. Next week at this time, we will talk about feeding the horses and mules.

UNITED STATES DEPARTMENT OF AGRICULTURE
Radio Service
OFFICE OF INFORMATION

U. S. RADIO FARM SCHOOL. First RELEASE Wed., Nov. 3

PROGRAM

SHORT COURSE: "Fall Problems in Poultry Management."

LECTURE NO. 5: "Fattening Chickens for Market."

ANNOUNCER: At this time, the regular U. S. Poultry Farm School hour, comes the fifth of our series of lessons on Fall Problems in Poultry Management. The subject this evening is a timely one and of interest to most keepers of poultry. We now turn you over to the "radio schoolmaster," with our regular admonition about registering for the printed lessons, which the U. S. Department of Agriculture sends free to all enrolled students. Now for the lesson.

* * * * *

We have before us tonight a weighty problem.

The problem is how to get the higher market prices for our surplus chickens.

I call it a weighty problem, because growing chickens seem to run to slim styles.

But a fattening period before they are marketed will improve their weight and the quality of their flesh. That will mean better prices.

Bob Barker was asking my advice about fattening the other day. He says he's going in for especially fine-quality table chickens -- He figures he can build up a good trade with discriminating folks among the motorists who pass his place.

It's a good idea, too. There are opportunities there. I congratulated him. Then he began asking about how to fatten his chickens.

"Well," I said, "the most common way to fatten them while they're on range is to just increase the corn and corn meal in the ration and feed them heavily for a period of 1 to 3 weeks."

"Yes, I know," he objected, "that range feeding is all right for ordinary purposes -- but I want to fatten 'em for high-class trade."

"In that case," I said, "you'd better put 'em in a pen. Pen up about 30 to 50 chickens -- with or without a small yard attached to the pen. Then feed 'em heavily on a fattening ration for from two to three weeks."

"What kind of fattening ration?" he asked.

"A good fattening mash," I explained, "can be made by weighing out two parts of corn meal to one part middlings and mixing them to a crumbly consistency with skimmilk or buttermilk.

"In case you don't have the milk," I went on, "you can make a good mash of one part bran, one part middlings, three parts corn meal, and 1/4 part meat scrap -- by weight. In that case, be sure and supply green feed to the chickens."

"Oh, I can get the milk all right," Bob replied.

"That's good," I said. "You know it takes from three to four pounds of grain to make a pound of gain in pen fattening if the feed is mixed with milk. But when water is used you need from 6 1/2 to 7 1/2 pounds of grain to make a pound of gain."

"I suppose I should feed the mash every morning and afternoon?" he suggested inquiringly.

"Right," I agreed, "and in addition give your chickens a light feed of cracked corn late in the afternoon."

I knew that I didn't have to tell Bob that he should keep water and grit before the chickens all the time. Bob's been raising chickens some time. He just never has gone in for high-quality table meat before.

"How about these milk-fed chickens -- how are they handled?" Bob wanted to know.

"They are fattened in crates," I explained. "Packing houses where large numbers of chickens are fattened each year use that method. They confine the chickens in batteries, usually arranged in tiers, with 8 to 10 chickens in each compartment."

"How about fattening chickens on the farm that way?" he asked.

"Sure," I said, "It's done. Poultrymen fattening for high-class retail trade do the same thing on a smaller scale."

"I think I'll try it," Bob said, "What do you feed the chickens besides milk?"

I explained that the fattening ration is always made up of about 60 per cent milk. The milk is mixed with a grain mixture of about three parts corn and two parts oatmeal.

If you want to, you can use oat groats, oat middlings and low-grade wheat flour instead of the rolled oats and add five to eight per cent of wheat middlings or bran to these rations.

You mix the feed to the consistence of porridge and give it to the chickens three or four times a day. About 3 1/4 pounds of grain mixed with 2 pounds of milk are required to make a pound of grain in crate fattening under the ordinary commercial conditions. The chickens are fattened from 7 to 17 days.

When they are first put in the crates, they should be fed lightly for two or three days. After that, you can feed them as much as they will clean up in 30 minutes.

The last meal of the day should be the heaviest. Chickens can also be fed more heavily toward the end of the fattening period.

I can hear some of you saying, as Bob did, that from 7 to 17 days is rather indefinite. How are you going to tell which to make it.

The answer to that, is, that it depends on the weight of the chickens with which you start. Small chickens give the best results on the longer feeding periods. A good rule to follow is: the heavier the chickens are when they are put in the crates the shorter the period of fattening.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

PROGRAM U. S. FARM RADIO SCHOOL Second RELEASE Wed. Nov. 3

SHORT COURSE: "Poultry Houses."

LECTURE NO. 5: "Cleaning and Disinfecting the Houses".

ANNOUNCEMENT: One of the chief concerns of the poultrymen this season of the year is to prevent diseases -- the bane of the poultry business. The next lesson -- "Cleaning and Disinfecting Houses" is particularly timely and if Uncle Sam's recommendations are carried out you should stand a good chance of winning the controversy with poultry diseases.

* * *

Do you remember that old song we used to sing in school? It went something like this:

"Open wide the windows -- Open wide the doors --
Let the glorious sun shine in! "

There's good advice for egg men in those words.

For instance, I was swapping poultry talk with my neighbor, Fred Moore, not long ago. He told me he was going to build another hen house. He led me around and showed me just where he was going to put it. He planned to build it just to the north of a large barn.

"You're putting it on the wrong side of the barn, aren't you"?

"What difference does it make"? he asked. "The hen house will face south and get plenty of light", I explained, "but you will not get much direct sunlight".

"It may be fairly light and bright sunlight helps to keep the house dry and sanitary and the hens in good health. It's a good disinfectant."

"You don't want to forget," I went on, "that germs cause contagious diseases and that parasites make hens weak and cause them to loose flesh. The way to fight the germs and parasites is to keep the poultry houses clean and well disinfected."

"That's right," Fred agreed, "I always give the inside of my hen houses a good coat of white-wash made from freshly slacked lime".

"That certainly makes them nice and attractive looking", I said, "but if you will just add two ounces of crude carbolic acid to each gallon of the white-wash, you will make it a better disinfectant".

"That's a good idea"! he nodded.

"And speaking of disinfectants," I said, "one of the best is a compound solution containing 50 per cent cresol. You can buy it ready to use. Add one pint of the solution to ten quarts of soft water. A five per cent solution of carbolic acid; that is, one pint of carbolic acid to ten quarts of water; also makes a very good disinfectant."

Fred said that he carefully applies the disinfectant to the inside of his poultry houses twice a year. Once in the fall before he puts the pullets in the laying pens. And again in the spring when the weather begins to get warm. That's a good rule for you other poultry raisers.

You can use either a spray pump or a brush --- the idea is to get disinfectant into all the cracks and crevices. You should spread it over the ceiling and the floor. You should also see that nests, roosts, and boards get a thorough treatment.

But before putting the disinfectant on, you should clean the entire house -- and clean it thoroughly. Scrape all surfaces clean. If your houses have dirt floors, you should take off the top two or three inches of soil each year. Then you should replace the removed soil with fresh sand or fine gravel and dirt.

Of course, concrete and wooden floors are more sanitary than dirt floors and a whole lot easier to clean.

Besides the general twice-a-year house-cleaning and disinfecting, the roosts, boards, and inside of the nests need special treatment to keep down the mites. Twice a year they should be sprayed with either crude petroleum or anthracene oil.

I suggested that to Fred Moore and he said that he'd been chasing the mites with his automobile.

"What d'yer mean, 'chasing 'em with your automobile?" I asked.

"Well," he explained, "I use automobile crank case drainings for painting the roosts and nests."

If you don't give yours some such twice-a-year treatment, you should spray the roosts and boards with a standard disinfectant every six to eight weeks dur-

the winter. During the summer, you had better make it every two or three weeks.

Of course, you should renew the litter on the floors as often as it becomes dirty, damp, or used up. Just how often will depend on weather conditions and the number of chickens in the house. Usually about every eight weeks you should replace the old litter with four inches of clean straw, shavings, sawdust or sand

Remember, too, that dirty nests make dirty eggs, and bare nests often cause cracked eggs. To avoid any cut in your egg profits from these causes, keep about two inches of clean straw in the bottom of the nests. Change the straw as often as it becomes soiled or used up.

If you use dust boxes you should empty them three or four times a year and fill them with clean, fine dirt or ashes.

You should clean the boards at least twice a week. After each cleaning, sprinkle them with sand, dry dirt, or sawdust. And remember in cleaning the poultry houses, don't overlook the ground around the poultry houses. It should be kept clean and sanitary.

But as I said before, with all your cleaning and disinfecting, don't fail to make fullest use of the disinfecting power of sunshine. It will help brighten up your poultry path to profits.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

U. S. RADIO FARM SCHOOL First Fri.Nov.5

PROGRAM..... RELEASE.....

SHORT COURSE: "Seclection and Improvement of the Dairy Herd."

LECTURE NO. 5: "Feed Cost and Income Over Cost of Feed."

ANNOUNCEMENT: Last week on the U. S. Dairy Farm School program we pointed how and why it pays to keep good cows. This week we are going to discuss the relation of feed costs to profits. We now turn the class to our radio schoolmaster who will interpret the lessons from the U. S. Department of Agriculture. If you have not enrolled in the "farm school" do so at once.

* * *

Tonight we have another problem in dairy arithmetic.

When I say it's about feed costs --- some of you may think I'm going into higher mathematics.

But this is going to be simple addition and subtraction.

We frequently hear of dairymen getting big milk and butterfat production.

Most often when we come to look into the matter we find that they also spend a lot more on feed -- they give their cows a liberal grain ration.

They get a bigger income, but it costs more to get it.

The question is does it pay?.

Do they add to their profits or just to their gross income?

Fortunately, tonight we have the figures which give the answer.

I've just gone over the yearly individual records of 2,837 cows from the Central West. The records not only show what the cows produced in milk and butterfat, but they show what the cows were fed and what it cost to feed 'em, as well as what the income was.

The cows that got no grain produced 184 pounds of butterfat in a year. Those that ate $10 worth of grain or grain products in a year produced 239

pounds of butterfat; the cows that ate $20 worth of the concentrates produced 275 pounds of butterfat; those that ate $30 worth produced 296 pounds of butterfat; those that received $40 worth produced 329 pounds while those who got $50 worth of grain ration produced 364 pounds of butterfat.

In other words, the owners who fed their cows the most grain got the most butterfat. As the cost of the grain ration went up, so did production.

"That's all mighty well", I suppose some of you practical dairymen are saying, "but is the increased production worth what it cost"?

The records give the answer. On the average, each of the cows which got no grain returned to their owners just $58 income above the cost of feed. Each of those which received an average of $50 worth of feed, returned to their owners $144 income over cost of feed. Evidently it pays well to feed cows well.

Of course, the liberal feeding must be done intelligently. In a few cases, the records show individual cows and even herds where the feed costs were high and the profits low. In one such case, I found that the hired man was largely to blame. He had just dished out the grain with a scoop shovel and fed all the cows alike regardless of production.

It is certain, however, that high production cannot be obtained without liberal feeding. It cannot be obtained even with liberal feeding unless the cows are of high quality. It's the combination of good cows and intelligent feeding that brings the big profits.

There's the case of a cow-testing association in Wisconsin. Last year, it had 27 herds on test. When the year was completed, 26 out of the 27 herds had an average production of more than 300 pounds of butterfat per cow and an income per cow of more than $100 over the cost of feed.

The one herd that fell below $100 in net income was the one which fell below 300 pounds in production of butterfat.

The cows of that entire association averaged 10, 086 pounds of milk and 363 pounds of butter fat. On an average they returned $146 per cow in income over cost of feed. On an average they returned more than $3 for every dollar spent for feed. The average price received for the butterfat was slightly below 60 cents.

Records from different districts of the West Central, Southern and Eastern States have all shown that large production and a high net income over feed cost go along with a liberal grain ration. But in some districts feed costs are excessively high.

In some cases in some of the Western States, they have apparently been able to get satisfactory results by cutting the grain ration very low and feeding liberally of legume hay and silage.

That's a good tip for you dairy herd owners in sections where feed costs are highest. For practically every agricultural district there are dairy farmers who might greatly increase the net income from their dairy herds by growing and feeding more legumes.

If you can carry out this practice in such a way as to cut the cost of feed without reducing the production per cow, it's as plain as two and two is four that you'll get a larger net income from your herd.

But always bear in mind that it pays to keep good cows and to feed them well

Next week we'll talk about the cows that freshen in the fall. Just, now, however, let's take a smell of the odors which sometimes get in our milk.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

PROGRAM..... RELEASE.....

U. S. RADIO FARM SCHOOL Second Fri.Nov.5

SHORT COURSE: "Production of Good Milk

LECTURE NO. 5: "Effect of Feeds on the Flavor and Odor of Milk."

ANNOUNCER: The second dairy lesson is the fifth of a series on "Production of Good Milk". The radio school master is going to talk about bad flavors in milk and tell you how to get rid of them. While he's doing that get out the writing pad and pen your request to this station for the printed material - a total of 192 lessons that regularly enrolled students in the farm shcool are entitled to receive without cost. The lesson follows:

* * *

The baby refused to drink his milk the other morning.

"Look here, young man", I said in my best stern-parent manner, "you drink that milk"!

"Daddy, it don't th-mell good", he objected.

I thought that was just another excuse. But his mother tasted it. Then she made me taste it. The baby was right. The flavor and odor were downright unpleasant.

Well, I decided I'd just run out to the Holmes Dairy, from which the milk had come, and try to find out what was the matter with it. As I drove along, I ran over in my mind the four main causes of flavors and odors in milk.

It hadn't tasted like any of those caused by changes due to bacteria. It didn't seem like one which might have come from the physical condition of the individual cow. Neither did it appear likely that it had been absorbed by the milk after it had been produced.

"Probably due to some highly flavored feed the cows have been eating". I said to myself.

As I drove in the gate, I met John Holmes himself coming out of the barn.

"Don't say it", he shouted as soon as he saw me. "I've already had a a dozen telephone calls this morning complaining about my milk".

"What's in it?" I asked.

"You've got me," he replied. "I wish I knew."

"Did you feed the cows any silage, green alfalfa, cabbage, or turnips?"

"Yes-s," he admitted, "I fed 'em some corn silage."

"When did you feed it," I questioned.

"About an hour before milking time," he said.

"That's the trouble, then! I exclaimed. Then I told him about the cow that sniffed the garlic -----

You all know that garlic odor gets in milk when the cows feed on wild onions in the pasture. Well, specialists of the Department of Agriculture made an investigation of flavors and odors in milk. They wanted to find how they got in ---- and what's more-- how to keep 'em out.

They fed cows garlic at different times and in different amounts. And they tested the milk at different times after feeding.

They found that just one minute after feeding a cow garlic, the garlic odor could be detected in the milk.

Ten minutes after feeding, the garlic odor had become very strong.

It remained objectionably strong four hours after feeding.

Milk taken after four hours began to have less and less garlic odor and seven hours after feeding the odor was gone.

They also tested samples of the cows' blood. The garlic odor was noticed in the blood 30 minutes after feeding and was very strong in blood samples drawn 45 minutes after the garlic diet.

They even placed garlic around the cow in such a way she couldn't eat it. They just let her breath that garlic odor for 10 minutes. Two minutes later, they milked her in an atmosphere free from garlic and found a strong garlic odor in the milk.

They concluded that the garlic flavor was absorbed by the blood from the stomach and even from the lungs and passed on to the milk.

Other experiments showed that when corn silage, legume silage, green alfalfa, cabbage, and turnips are fed to dairy cows one hour before milking, the flavor and odor of milk are seriously affected. Green cowpeas, Irish potatoes, dried beet pulp, and carrots were found to affect the milk only slightly. Green corn, green oats and peas, pumpkins, and sugar beets had practically no affect on the flavor of the milk.

When I told John Holmes all this -- as I'm telling it to you now -- he said, "That just makes it worse than I thought -- but what I want to know is how to get rid of them."

"Prevention is better than cure! John," I suggested.

"Sure,"he agreed,"and I've kept out the garlic smell so far. I always clear my pastures of wild onions or any other weeds that cause trouble."

"You should keep your cows and barns clean," I continued.

"Mine are," he replied indignantly, "And what's more my cow stables are well ventilated.

"That's good", I said, "Now prompt cooling and storing of milk cold will check the development of odors and flavors caused by the action of bacteria."

"I look after that all right!" John declared impatiently.

"Well, I suggested, "you can reduce the flavors due to strong feeds and feed-tainted barn air by proper aeration. You can even get rid of slight odors that way."

"Yes, I do that," he said," but when the odors are so strong that don't fill the bill."

"There's just one thing you've overlooked," I explained, "that's the lesson from those experiments.

"How's that," he inquired.

"The feed odors were worse shortly after feeding, you remember. They decreased before next milking time, didn't they?"

He agreed that they did.

"Then," I said, "The way to avoid the odors from strong flavored feeds, is to feed them just after instead of before milking."

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

~~U. S. Radio Farm School.~~ First Nov. 8. 1926

PRO~~Short Course: "Livestock Breeding."~~ RELEASE

Lecture No. 6: "Problems in Swine Breeding."

ANNOUNCEMENT: For the next few minutes we're going to call together our radio class in "Livestock Breeding" and let our "radio schoolmaster" who represents the specialists in the U. S. Department of Agriculture, discuss some of the important problems in swine breeding. First, however, we're reminding you again that unless you have officially registered for these courses, by requesting an enrollment blank, you are missing the highly valuable printed lessons supplementing these radio lessons. Here's the schoolmaster.

* * * *

As the saying goes, "Pigs is Pigs."

First-class hogs can be produced from any of the standard breeds. There is no best breed.

I wish more folks would remember that.

Only yesterday, Hank Watson asked me to name the best breed of hogs.

"It depends on who you are talking to," I said, "Most any successful hog raiser will tell you his kind is best -- but the man who is not doing well with that kind, may think different." . .....

Hank told me he preferred red or spotted hogs to blacks or whites -- and he even suggested he might try to develop a new breed. Hank is just starting in the hog business, you see.

"Well," I said, "It's generally best to grow the same kind most of the other farmers around you do -- but suit yourself. Anyway, color is not what counts. In the hog business, you've got to think below the hide. It's the meat that sells the hogs.

"As for trying to develop a new breed," I continued, "The standard breeds of lard and bacon hogs meet all the market demands -- so why start trouble for yourself."

Then I told him, as I am telling you, that he'd better confine his efforts toward developing a uniform herd --- one from which he can market hogs of the same size and type. Select purebred stock of any breed -- and keep it up to standard type by careful selection -- There's the big opportunity -- breeding the best to the best.

Right away Hank wanted to know how to select the best.

Breeding animals, I explained, should always be mature. They should be as nearly perfect specimens of the breed as possible. They should be of good quality -- but not too fine.

Since breeding animals are kept in the herd longer than those raised for market, they should have a good frame of strong heavy bone. Their chests should be well developed. Their bodies should be of good length, with well-arched backs. Their legs and feet should be straight, medium-sized, and placed well apart.

"The main thing," I told Hank, "is to keep animals in the herd which will produce the greatest number of pounds of marketable pork per sow. The cost of keeping a sow on the farm is the same, whether she raises eight pigs or only five -- the difference comes in the profits."

"I suppose you'd select sows that come from good-sized litters themselves?" Hank suggested inquiringly.

"Not only that," I replied, "but those whose dams and grandams come from good-sized litters.

"And furthermore," I added, "Any sow intended for the breeding herd should have at least twelve well-developed milk fountains. Big litters won't mean much, unless each little pig can find a place at the dinner table.

"I suppose a lot of the pigs never grow up to market size," Hank suggested.

"Yes," I said, "cutting those losses is quite a problem. I'll tell you what you do. Write to the Department of Agriculture. They can give you a lot of information along those lines. It's always good to have something of the kind handy for emergencies."

That applies to you other fellows out there, too. But, as we were saying, sows should be equipped for handling their jobs. They should be equipped by temperament as well as physically. A sow must have a quiet disposition or she will not be a good mother to her pigs.

A cross, nervous, or irritable sow is undesirable -- she should be gotten rid of as soon as practical. It is also desirable not to retain the pigs from such a sow -- the mean disposition may be hereditary.

With efficient sows, you should keep high-class boars that will produce the type of hogs you desire to market. It is better to buy a tried boar if you can get one of the right type and conformation at a reasonable price, I told Hank.

Hank, however, seemed to have in mind selecting a boar from among young pigs. I warned him that it's almost impossible to tell how a suckling or weaning pig will turn out.

"Don't select him until he's at least six months old," I said, "and even then you'd better look over the rest of his family."

"What do you mean," Hank said,"I'd be selecting the boar not the whole herd."

"Yes," I said, "but 'like begets like' you know. If you can see the sire, and the dam or the older close relatives of the young boar you have in mind you may be able to get a better line on his faults or good points."

As the saying goes, 'the boar is half the herd.' But don't make any mistake; you can't expect success unless the quality of both the sows and the boar are given careful consideration.

Next week we are going to give a few points on breeding sheep for mutton and wool. But for the present, we are going to talk a little more about feeding -- about feeding horses.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

PROGRAM U. S. Radio Farm School Second RELEASE Wed., Nov. 8

SHORT COURSE: "Livestock Feeding."

LECTURE NO. 6: "Feeding Horses."

ANNOUNCEMENT: In the next course - "Livestock Feeding" we're ready for the lesson on "Feeding Horses." Did you know that for the cost of a post card you can receive copies of the 216 U. S. Radio Farm School lessons to be broadcast throughout the winter from this station. At the completion of each short course of eight lessons the U. S. Department of Agriculture mails the printed lectures to all regularly enrolled students. There is no charge, whatever, for this service. Simply send in your request for enrollment in the U. S. Radio Farm School.

* * *

(Aside as if in argument with someone in studio)

Feeding horses! -- No, horse feeding! -- sure -- horse is singular, isn't it? --

(Continuing more directly to audience)

When it comes to feeding, you've got to treat a horse as an individual ----

(Directly to audience)

We've just been having a little argument as to whether the subject of this talk should be singular or plural ---

Anyway -- it's certain there's no shot-gun ration that will hit horses in general. What one horse thrives on may be a poor feed for other horses.

There's no other kind of livestock feeding that depends so much on knowing your animal. I guess that's why some of us like horses so much - we have to keep such a close watch on what they need.

The horse himself -- his size, his age, his condition, the amount of work he is doing --- all have to be taken into consideration in selecting the kind of feed to use, the quantity of it, and the way of feeding it.

Then you know, you've got to change a horse's feed every once in awhile. Horses appreciate a variety of diet -- but if you want to prevent digestive disturbances, be sure and make your changes gradually.

Yet even if horse feeding is a highly individual proposition -- there are basic rules you can apply -- always with your eye to the appearance and condition of your horse as an added guide.

Take my horse or your horse. Either of them should always be fed regularly and carefully. They should never be overfed or underfed. It's a good idea to feed the grain in equal portions three times a day -- but the roughage should preferably be given two-thirds at night and one-third in the morning. Little, if any, hay should be fed at midday.

Both of them need water and salt. Of course, the weather, the kind of work, and the kind of feed, determine the amount of water they drink. But my horse, which I call "Old Average," drinks about 10 to 12 gallons a day. I water him before, during, or after feeding. I water him often, but never when he is very warm. I put the salt where he can get it and allow three fourths of an ounce a day.

"Average" weighs about 1,200 pounds. When he's doing moderate work, I give him 13 pounds of grain and about 14 1/2 pounds of hay a day. That's one and one-tenth pounds of grain and one and one-fifth pounds of hay for each 100 pounds of his live weight.

When he's doing hard work, I increase the grain to one and one-quarter or one and one-third pounds and the hay to one and one-quarter pounds for each 100 pounds live weight.

After a hard season's work, if he is in good condition I feed to keep him ingood condition. If he's a bit thin, I feed him so as to gradually increase his weight. When I just turn him into pasture for a day or so, I reduce his grain allowance about one half. About once a week I give him a warm mash, generally the day before a rest period.

When "Average" is not working he gets a limited amount of cheap feed, such as corn fodder, straw, silage, and roots. Of course, when there's plenty of good pasture, I just put them out on that with a light grain ration to help balance things up better.

When I want to get "Average" ready for spring work, I gradually change from coarse roughage to grain and roughage and increase the grain as the work becomes harder.

Of course, if "Average" was of a light breed like a race horse I would feed him more grain and less hay. Feeding large quantities of hay to light horses causes paunchy stomachs. A race horse with a paunch would be left at the post. Oats is the grain that shoves most race horses under the wire.

One pound of hay to one and one-fourth pound of grain per 100 pounds of live weight is a good allowance for horses of the light breeds. Oats is the premier concentrate and can make up the entire grain part of the ration.

When corn is fed either on the cob, shelled or ground, it should be supplemented with a nitrogeneous roughage like clean, bright, well-cured alfalfa or clover hay. But these hays should be limited to one-half or two-thirds of the roughage allowance.

Because it is generally available and clean, timothy hay is the most popular of the roughages for horses. It is especially efficient when fed with oats and protein-rich supplement. A mixture of timothy and clover, grown together, is used for roughage in many localities. Prairie hay finds favor in the West, and gives the best results when fed with protein-rich concentrates. Pasture is foremost of the succulent feeds for horses. It acts as an appetizer and general tonic.

But bear in mind in feeding horses, feed according to their needs and keep a close watch of each individual to help find out what those needs are.

UNITED STATES DEPARTMENT OF AGRICULTURE
Radio Service
OFFICE OF INFORMATION

U. S. RADIO FARM SCHOOL First RELEASE Wed., Nov. 10

PROGRAM

SHORT COURSE: "Fall Problems in Poultry Management"

LESSON NO. 6: "Killing and Plucking Chickens."

ANNOUNCEMENT: Again, at this Wednesday period, we call together the poultry studen in Uncle Sam's Radio Farm School. In previous lessons we've talked about fattening poultry for market - now we're ready to cash in on our efforts. "Killing and Plucking" chickens is the theme of the first talk. If you fail to get all of the facts from the talk remember that printed copies of this entire series - 216 lessons to be exact, will be sent you on request. Alright Mr. Schoolmaster.

* * *

The other day, I told my neighbor, Fred Moore, I was going to talk tonight about picking chickens.

"Huh," he grunted, "I could tell 'em all about that in half a minute."

"Is that so!" I said.

"Sure," he answered, "All you have to do, is to chop the chicken's head off -- allow the bird to bleed thoroughly -- dip it in scalding water -- and then -- just pick the feathers off."

"That's about the easiest way for home consumption," I agreed, "but it won't do for market poultry. Market poultry should be killed by sticking the chicken in the throat so that the head is not cut off.

"You mean that you've got to leave the head on?" Fred asked.

"Yes, if you expect to find a market for your chickens," I replied.

Fred seemed nettled that he hadn't thought of that.

"Of course," he said, "there may be a few little points like that -- but I guess everybody knows them."

"Do you think so," I challenged, "Then come go into the market with me, and I'll show you a few things."

He took me up. When we got to the market, there was row after row of dressed chickens. At first glance, it looked to me as though I never had seen such well-prepared birds. I could see that I-told-you-so look twinkling in Fred's eyes. Then I caught sight of a chicken with reddened blotches on its skin.

"There's one," I said, "It not only doesn't look attractive -- but it won't keep well. The trouble is, it's been poorly bled."

"How would you bleed it? Fred asked.

"A simple method of killing," I explained, "is just to loop a cord around both legs of the chicken and hang it head down. You hold its head in your left hand, open its mouth, and then cut the jugular vein in the throat just below the base of the skull. It just takes onecut with a sharp, narrow-bladed knife. If you use care in making the cut and in hanging the bird head down, you'll produce a well-bled carcass. ---

"Look at that chicken, too," I continued as I noticed one with little tears in its flesh. "Whoever picked that chicken didn't pull the feathers in the direction in which they were lying.

"And there's another over there -- the one with the discolored skin on its thighs ----"

"What's the matter with it?" Fred broke in.

"Scalded too much," I told him, "After you kill a chicken for scald picking -- either by hitting it on the back of the head with a short club or by braining it with a knife -- you ought to bleed it thoroughly and then plunge it into water which is almost but not quite boiling. Move it about so the water gets through the feathers so they will pull easily. If you get the water too hot or scald the chicken too long, you make an unattractive carcass which won't keep well.

"After being scalded and picked, the chicken should be dipped in hot water and then in cold to give it a plumper appearance. Evidently that was not done with that scrawny-looking one there."

"How about these," Fred said waving his hand toward a lot of finely dressed chickens. "There's nothing wrong with them -- and there are more of them."

"Yes," I admitted, "they've been dry picked. Dry picking is harder -- but it makes better-looking chickens. In dry picking," I added, "as soon as you cut the jugular vein, you stick the knife right on through the roof of the chicken's mouth into its brain."

"What's that for?" Fred wanted to know.

"It loosens the muscles that hold the feathers. It makes the feathers come out easier," I replied.

"About that time, I noticed that the poultry dealer behind the counter was listening-in on our remarks. But I went on explaining:

"As soon as you stick the chicken, you hook a blood can or a weight to the lower bill. Then you pluck the feathers immediately. If you don't do so at once, they are harder to get off. Begin with the big tail and wing feathers. Then the feathers from the breast, sides, thighs, legs, hip and back. Then comes the neck feathers. The small, wing feathers come last. ---"

Just them, Fred turned to the poultry dealer. "Do losses from poorly dressed poultry amount to much?" he asked.

"Considerable," the poultry dealer spoke up. It's not uncommon for dressed chickens to come to market in bad shape -- especially in the summer time." ---

"Yes," I added, "chickens should never be dressed for market except in cool weather, unless they are going to be eaten right away, or unless it takes just a few hours to reach market. They should be cooled promptly after picking, either by putting them in iced or cooled water, or on ice, or out of doors when the weather is cold.

"That's right," nodded the dealer, "And they shouldn't have any solid food for 24 hours before killing. They don't keep well when their crops are full."

I hope Fred got something out of that trip. I think we all did. But tonight I'm going to talk about another subject and that is houses for breeding stock. Next week we'll market some turkeys.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

PROGRAM U. S. RADIO FARM SCHOOL Second RELEASE Wed. Nov. 10.

SHORT COURSE: "Poultry Houses".

LECTURE NO. 6: "Houses for Breeding Stock".

ANNOUNCEMENT: The next lesson is the sixth of a series on "Poultry Houses". Since this short course started, thousands of listeners have taken advantage of the opportunity to enroll in the U. S. Radio Farm School and in this way secure printed copies of the 216 lessons to be given over the air. The U. S. Department of Agriculture which sponsers these programs furnishes the printed material to you without charge. Simply write this station and request an enrollment blank. Next, our station schoolmaster is going to give you some pointers on "Houses for Breeding Stock".

* * * * * *

This is certainly a bright and cheerful subject!

Breeding houses for chickens have to be bright -- they must let in plenty of sunshine --- they must be dry, roomy, and well ventilated --

The cheerful part about it is that such houses help produce plenty of hatchable eggs and a lot of vigorous little chicks. ----

Last week, I helped Bill Hall plan the quarters for his breeders -- I wish that you could have been along with us --- there's nothing like working out these things on the ground, you know. ---

At first, Bill thought he'd build the houses down on the lower end of his place. Then I reminded him that they should be located where the water and air drainage is good. There weren't any buildings or anything to act as windbreaks down there, either.

Finally, he decided on a fine location back of his orchard where the chicken houses would be protected from winter winds and could be built facing south, so they could get plenty of sunshine.

You know, breeding fowls need all the sunshine they can get. They also need plenty of exercise. Even during the winter months, whenever the weather is fine, they should be allowed out of doors. They should have as much range as possible.

On that account, I advised him to keep the chickens in small or colony houses and give them free range.

"Colony houses on open range", I told him, "should be placed from 100 to 200 feet apart, depending on the number of chickens kept in each house".

"Wait there"! Bill objected, "I've got several varieties of chickens and I'll have several matings to keep separate".

"In that case", I said, "the only practical thing to do is to have separate yards for them. To keep good grass on the yards, you should allow from 200 to 250 square feet of space for each chicken. Small fowls need less space than the larger ones."

"Speaking of space", Bill said, "how much does each chicken need in the house? What size houses should I build for these small flocks"?

"Allow from 5 to 7 square feet of floor space for each fowl", I told him. "Make the houses deep enough to keep the hens comfortable during cold weather".

"How deep is that"? asked Bill.

"That depends on the size of the flock", I answered, "but usually it is about 10 to 15 feet --- protection from the cold is especially important in breeding stock", I continued.

"It certainly is", he agreed, "if breeders get their combs frosted or frozen --they don't produce many hatchable eggs".

"Well", I remarked, "the best way to prevent that from happening, is to keep the houses dry. Stfaw in the gable or top of the house will help keep things dryer and warmer during the winter and cooler during the summer".

"That's right", Bill said, "We have got to be thinking about summer, too. And summer and winter, there has to be air and light in there for the hens. What openings should we have in the houses"?

"Of course", I explained, "you should adapt the number and size of the openings to climatic donditions. But you should have openings in the front of the house so that the hens can get direct sunlight while they're inside. Houses can be made cooler in the summer by also having openings in the back. In fact,

all houses as much as ten feet deep should have a window for light and ventilation in the rear wall just above the floor".

"I notice a good many breeding houses built on runners so they can be moved every year or so to fresh ground", Bill suggested.

"That's a good idea", I said, "but the houses have to be comparatively small. A house larger than ten by fourteen feet is hard to move".

"How about roosts and other inside fixtures"? he asked.

"Breeding stock need plenty of roosting space", I answered. Build the roosts next to the back wall where they are out of the way and where the hens are kept out of the drafts -- and", I added, "make the roosts, boards, nests,and feed hoppers all simple, inexpensive, and easy to clean".

And then I told him as I'm telling you. If you are going to do any careful breeding work you'll have to build trap nests. With a laying nest so arranged that the hen can not get out until let out, you can keep a check on her individual production.

Next week we'll talk a little about houses for turkeys, geese, and ducks.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

U. S. RADIO FARM SCHOOL

PROGRAM..... First RELEASE..... Fri. Nov. 12.

SHORT COURSE: "Selection and Improvement of the Dairy Herd".

LECTURE NO. 6: "Cows That Freshen in the Fall".

ANNOUNCEMENT: Before starting Uncle Sam's Dairy School we wish to call your special attention to the fact that each of you can receive attractive printed copies of the 216 radio lessons, covering all phases of the livestock, dairy and poultry business by writing to this station and requesting enrollment in the U. S. Radio Farm School, sponsored by the U. S. Department of Agriculture. This is a wonderful opportunity and we ask you to pass the good news on to your neighbors. Now for the lesson on the subject "Cows that Freshen in the Fall"!

* * * * * * * * * * *

I was called on to settle a big dairy argument the other day ---

That made it a still bigger argument!

To begin with, I was just an innocent passer-by. Homer Smith and Charlie Russell were doing the talking. They seemed to be getting heated up at it, too. When they caught sight of me, Homer called me over. He explained that he had said that it's more profitable to have cows freshen in the fall. Charlie, however, claimed that the cows that freshen in the spring and summer pay best. They wanted to know what I thought about it.

"Well---", I said, "I suppose that depends on conditions --- but I've always heard that cows that freshen in the fall or winter net the most".

"Isn't that what I told you?" Homer demanded, turning to Charlie.

But Charlie wasn't so easily downed. He insisted that the had it pretty straight that spring and summer freshening not only gave a higher production, but a larger income above feed cost. Homer made a few sarcastic remarks about Charlie's information. Feeling wasn't getting any better between the two.

"Wait there", I cautioned, "The Department of Agriculture has made a study of 10,000 yearly individual cow records from different sections of the country. Let's look up the County Agent and see if he hasn't got a report on that study -- maybe it will answer our question.

We did that. And we found the records showed just what we wanted. We all crowded around looking over the figures.

"Look there", almost shouted Charlie?" Those figures show that in 10 cow testing associations, cows that freshened in the summer were the ones which produced the most milk. In 7 other associations cows that freshened in the spring produced the most.

"And look at the butterfat figures, in 8 associations summer freshening won and in 7 more spring freshening won.

"And that's not all," he added triumphantly, "see it says that in income over cost of feed, spring freshening won in 9 associations and summer freshening in 8. Net cost -- that's what counts --- Didn't I tell you"?

We could all see that the figures were as he said.

"Hold on there", Homer finally spoke up as he stared at the report. "This gives the results in more than sixty associations. Your figures are all right, but look at the others.

"In 29 associations the highest milk production was by cows that freshened in the fall and in 18 winter freshening won. That beats your 10 and 7. And look at the butterfat production, fall freshening won 38 times out of a possible 67. Winter freshening won in 13 associations.

"And there are your net cost figures, too", Homer went on, they show that in income over cost of feed fall freshening won in 30 associations, and winter freshening in 17 as against your 9 and 8 for spring and summer".

Evidently Homer had the best of it. He continued to push his advantage. "There it says, 'in production of butterfat those that freshened in the fall beat the winter freshening cows by 10 pounds and the spring and summer freshening cows by 32 pounds'.

"It cost a little more to feed the cows that freshened in the fall and winter, yet they won out on average income over feed cost. On the average the cows that freshened in the spring returned $71 in income over cost of feed. Those that freshened in the summer returned $67. Those that freshened in the fall returned $77 and those that freshened in the winter returned $76 in income over cost of feed".

Homer seemed pretty well satisfied with himself. Charlie didn't appear so comfortable.

"On the average all along the line", I agreed, " the cows that freshened

in the fall and winter won out".

"Those figures certainly prove that dairymen should have their cows freshened in the fall", Homer stated with pompous emphasis.

"Not so fats", I said, "If nearly all our cows freshened in the fall there would be an oversupply of dairy products in the winter and an undersupply in summer. Profits would then be reversed, and spring and summer freshening would win".

"Sure", put in Charlie, brightening up. "And you'll notice that the figures donot show any overwhelming gain from cows that freshen in the fall either in production or income over feed cost".

"That's right", I agreed.

"Well, if we shouldn't have them all freshen in the fall, what do these figures mean? challenged Homer.

"It would seem", I said, "that the best thing would be to have the freshening cows well distributed thoughout the year --- with a preference for a large percentage of fall freshening cows.

"There is a slight advantage in fall and early winter freshening in production of milk, in production of butterfat, and in income over cost of feed, but personally I'd rather own a high producing dairy cow that freshens in the spring or summer than a low producing dairy cow that freshens in the fall or winter. Quality of cow is vastly more important than the season of freshening. But quality is what we will talk about next time. For the present, let's clean up the milking machine.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

U. S. FARM RADIO SCHOOL

Fri. Nov. 12.

PROGRAM..... RELEASE.....

SHORT COURSE: "Production of Good Milk".

LECTURE NO. 6: "Cleaning Milking Machines".

ANNOUNCEMENT: The second short radio lesson tonight is on the subject of milking machines. For the benefit of those who missed the previous announcement we repeat the good news that printed copies of the 216 radio lessons prepared by the U. S. Department of Agriculture can be received free by sending your name to this station requesting enrollment in the U. S. Farm Radio School. Now for the lesson.

* * * * * * *

I was out to Walter Glover's dairy farm yesterday. Walter wasn't himself at all. He seemed just about as discouraged as a young man ever gets to be.

The reason I soon found out was that he had just gotten a notice of another high bacteria count from the Health Department.

"I don't seem to be able to produce good milk any more", Walter remarked gloomily.

"That's not the way to look at it", I said, "Let's just take your problem to pieces, as it were, and see what's wrong".

"It's not the problem we've got to take to pieces --- it's those milking machines --I'm sure they're the seat of the trouble", he declared.

"There's no reason why they should be", I replied, "Other dairymen are using mechanical milkers and producing high-grade certified milk with them.

"Of course," I added, "if you don't wash and sterilize them properly, they may be the direct cause of large numbers of bacteria in the milk.

"What do you mean, 'properly'"? Walter asked.

"Well, some variation of the heat method is best, according to investi-

gations by the Department of Agriculture", I suggested, and went on to explain that immediately after milking, the machines should be rinsed 10 or 12 times with cold or lukewarm water drawn through the machines by vacuum. The flow may be broken occasionally by pulling the teat cups out of the water and then immediately immersing them again.

After that, you go though the same process using hot water containing washing powder. You also should wash the cups and tubing with a brush, I told him. Then you should rinse the machines again by drawing clean hot water thru them by vacuum.---

"That seems like a lot of rinsing", Walter remarked.

"Sure", I agree, "and after rinsing you take off the long milk tube with the claw and teat cups. Then you plug the air tubes, if the machine is of the inflation type. Then you place the whole machine in a tank or can of clean water so that all the parts are entirely covered.

"You next heat the water, preferably with steam, to a temperature of 160 to 165 degrees Farhrenheit. You let it cool off gradually and leave the parts there until the next milking".

"Suppose you don't have steam", asked Walter.

"In that case", I replied, "just heat the water in a wash boiler on a stove --- But if you do that, don't put the rubber parts in the water until it is heated and the boiler taken off the stove or they may be damaged by coming in contact with the hot boiler.

"Give the milking machine pails and covers a thorough washing after every milking and then sterilize them. If you don't have the steam, sterilize them by putting them in boiling water for five minutes. Of course, if you have machines with electric motors on the tops of the pails, you should take those off before sterilizing the pail".

"Is that all I've got to do after each milking?" Walter asked with a sigh of relief.

"Well", I said, "maybe that's all after each milking, but once a day, you ought to clean the moisture trap or check valve on the top of the pail.

"Then twice a week you should take the machines entirely apart and wash all the parts thoroughly with brushes and hot water with washing powder in it".

"How about the vacuum line, you haven't mentioned that"? Walter asked sarcastically.

"If milk gets into the vacuum line", I said, "you should clean it immediately after milking. Anyway, you should clean the vacuum line at least twice a year by drawing hot water containing washing powder through it with a vacuum".

"That's an awful lot of trouble", Walter objected,

"It is not as hard as it sounds", I said.

"But is there no shorter cut"? he insisted.

"Don't look for any royal road to cleanliness in the milk business", I advised him. "Cleanliness is absolutely necessary to produce first-class milk-- whether with or without machines for milking. But you can't neglect machines and expect your milk to meet the tests. ---

"And another thing" -- I added -- you must clean and sterilize the rubbers thoroughly -- butter fat damages them at the temperatures used for sterilizing and shortens their life materially".

Walter immediately wanted to know about how long the rubber parts should last. I told him that the Department of Agriculture had conducted a series of tests to answer his questions and suggested he write them. In no case, however, I said, should he use old, split, or cracked rubbers.

That writing to the Department might also be a good idea for some of you who want detailed instructions about cleaning the milking machines.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

PROGRAM U. S. Radio Farm School RELEASE First Mon. Nov.15.

SHORT COURSE: Livestock Breeding

LECTURE NO. 7: Breeding Sheep for Mutton and Wool.

ANNOUNCEMENT: Again we are calling together the students of the U. S. Radio Farm School at this regular meeting time on Monday. Our first lesson is the seventh of the first two months Short Course on "Livestock Breeding". If you have missed previous talks we suggest that you write us for the full set of printed copies. Breeding Sheep for Mutton and Wool is our first lesson. The U. S. Department of Agriculture is the authority. And your Schoolmaster ------

* * * * * * * * *

Bob Murray told me yesterday that Wash Harper was going to start sheep raising.

"Good", I remarked, "Another small flock of the same kind of sheep we have, ought to help us all ----"

"Yes", said Bob, "but I understand Wash plans to buy a different breed from any around here".

"I suppose he knows what he's doing", I said, "but it looks like poor business to me".

"How about us going over to see him", suggested Bob. "Maybe we can persuade him to see it our way".

The upshot of it was that we lost no time getting over to the Harper place and explaining to Wash why we were there.

"Well", Wash said, "I'm going to raise farm sheep for both wool and mutton, but---"

"Sure", Bob broke in, "if you're going to be successful you've got to consider both."

"But ---" continued Wash, "I'm going in chiefly for mutton".

"That's just what we do", I said.

"Of course", went on Wash, "all of us agree that any breed is way ahead of inferior sheep representing no particular breed. But there are plenty of highly improved breeds. You have selected one which you think fits in with market requirements around here. I'm just going to select another. What difference does it make?"

"If you select the same breed we have, you can have lambs of the same size and kind as ours ready to ship at the same time". I explained. "Then we can go in together to fill a car. Or if we get a large enough number of lambs of the same kind and of good quality they will sell themselves. The buyers will come after them.

"Or look at it from the producing end", I went on. "After you start your flock, you'll want to improve its size and character as you go along, won't you"?

"Sure", agreed Wash.

"In order to make any such advance," I pointed out, "you'll have to have rams of the same type and breed as the rest of your flock."

"That's right", admitted Wash, "And I'd have to go pretty far to get the kind I've been figureing on".

"I tell you what I'll do", Bob said to Wash, "If you'll buy the same breed we have, I'll go in with you to buy a better ram than either of us alone would care to pay for. Then when the daughters of that ram are ready to breed, we'll send him to another flock in the neighborhood in exchange for another one that has been siring good lambs. We couldn't use him if he was too closely related to the ewes in the flock, you know."

"That's a good idea"! I added.

Wash was evidently wavering -- but he didn't like to admit his plan was not best.

"What points do you consider in selecting breeding stock"? he asked.

"Good breeding stock", I said, "should have an alert appearance. They should have broad chests, level backs, well-developed legs of mutton, and a good dense fleece of long-staple wool that is free from kemp and black fiber".

"The fleece should be uniform in density and fineness over the entire body. Cull out the ewes which show kemp and black fiber, and use only carefully selected rams which transmit their good characteristics in fleece production.

In that way you can improve the quantity as well as the character of the wool".

"But how about mutton"? Wash asked.

"In breeding for mutton improvement", I replied, "cull out the ewes that are decidedly off type. Keep the best ewe lambs and add them to the breeding flock each year. And select rams of the type desired. Carcasses from lambs which carry the largest percentage of high-price cuts of meat are always in demand on the market".

"I know where I can get some fine-looking ewes for breeding stock --- they are partly of the same breed you have", said Wash.

"Don't take them" I advised, "Females of mixed breeding are uncertain as breeders --- no matter how good they are individually.

Then I gave him another pointer. You know, you can get bigger profits when you get a bigger lamb crop from a given number of ewes. One way to get more lambs is to feed your ewes extra well at breeding time. The Bureau of Animal Industry of the Department of Agriculture has conducted feeding experiments for 10 years. It got 16 more lambs per 100 ewes from the ewes that were keptin a gaining, well-nourished condition at breeding time than it got from similar ewes not receiving extra feed at that period.

Speaking of breeding some time this week, I'm going down to look over some rams with Bob Murray and Wash Harper. But I'll be back in time to talk to you next week about goats.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

PROGRAM U. S. Radio Farm School RELEASE Second Mon. Nov. 15

SHORT COURSE: Feeding Livestock

LECTURE NO. 7: Feeding Swine

ANNOUNCEMENT: The second subject this evening is one of wide interest --- "Swine feeding". If you are not already one of the several thousand students enrolled in Uncle Sam's Radio Farm School send your name to this station without delay. This little act on your part will bring to you at regular intervals copies of the 216 radio lessons to be given from this station during the winter.

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(Loudly, as if calling hogs)

Pig-g-g-g-g-ey!!! Pig-g-g-g-g-ey!!!

(Aside -- not loudly, but with spirit)

Here they come!

(To audience in conversational tones)

If we're going to talk swine feeding -- we ought to call in the experts.

Pigs know how to make real hogs of themselves.

The old notion that hogs will eat anything -- and that anything in the way of feed is good enough for them -- is almost all wrong.

At selecting the right feeds in the right quantities and mixing them in the right proportions, you can't beat them.

Just put a choice of feeds before them. They will eat a little of this. Then mosey over and eat a little more of that. They'll never overfeed. If the choice of feeds contains all the food elements in palatable form, the hogs will mix a ration properly balanced and perfectly adapted to their body requirements for that particular day. They will do that day after day. In short, they demonstrate the self feeder system of management.

But, of course, if they successfully balance their own rations they must have the rations to do it with. You will have to furnish all the raw materials. They'll do their own mixing and balancing.

Corn is outstandingly the grain feed for hogs. Rolled oats, ground barley or ground wheat may be used at times, if on hand, but corn is standard. Fill one compartment of the self-feeder with it.

Put wheat middlings or shorts into another separate compartment, for pigs and sows in milk.

Put animal tankage or fish meal, or either of them combined half and half with old-process linseed meal, in still another compartment, and keep this compartment open for any pig of any age.

Finally, provide another open compartment containing the mineral mixture for the pigs or hogs to use when they need to supplement the grain feed.

You can do your special feeding of breeding animals by opening or closing the slides regulating the various compartments of the feeders.

Of course, you can work off as hog feeds slop feeds, refuse from garden truck, kitchen wastes, dairy by-products -- any or all the edible products of the farm ---. But keep them secondary.

Keep corn, shorts, tankage, linseed meal, pasture crops and minerals to the fore as hog feeds, and <u>grow hogs</u>.

I was telling this to a hog raiser the other day.

"That's all right in a general way", he said, "but it's the brood sows and weaning pigs that give me trouble".

"Well", I replied, "if you expect a sow to produce vigorous pigs and give them plenty of milk, you must feed them well during the entire period from breeding to weaning".

"I do that", he declared, "but somehow they don't seem to use it right".

"Not only must they get the proper feeds", I want on, "but they must be managed so they will assimilate the feeds properly. They can't assimilate properly unless you make part of the ration succulent feeds, such as pastures and roots, and see that they get plenty of mineral substances. They also need pure water, air, sunlight, and plenty of exercise".

"My chief trouble is getting the pigs started on feed after weaning", he complained.

"Maybe you are one of those fellows who try to have suckling pigs on Monday and weaned pigs on Tuesday", I remarked, "Weaning should be gradual".

"What do you mean 'gradual'", he challenged, "Just how would you feed weaning pigs"?

"The newly born pig, like the newly born of any other animal," I said, "needs mother's milk for its nourishment. Any other food, even milk from any other source, is a poor substitute.

"When they get their milk supply from a well-nourished sow they receive a complete ration perfectly balanced.

"But when the pigs reach the age of about three weeks, they can be helped wonderfully by occupying part of their playful time with a "pacifier" in the form of shelled corn. They learn to crack the kernels in a day or two and make the start in eating solid food.

"When they are about six weeks old you can add a valuable side dish of wheat middlings, shorts, old-process linseed meal, tankage, or fish meal. It will supply the protein which growing pigs need.

"The regular supply of milk from well-fed sows during this period furnishes plenty of mineral substances. But as the pigs begin to eat solid feeds they cut down on milk -- so that the mineral supplies must come from other sources. To be sure, they get their minerals, provide pasture crops which contain mineral elements and also have available a sheltered box of mineral mixture composed of 50 parts by weight of steamed bone meal, 25 parts ground lime stone, 25 parts of 16 per cent acid phosphate and 5 parts of salt.

"At about ten weeks of age, the pigs will be regularly feeding on the pasture crops, selecting grain, the ground feeds, and the animal protein feeds, and eating small quantities of mineral mixture to such an extent that their appetites are fully satisfied. Your weaning problem will be settled without a setback."

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UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

U. S. RADIO FARM SCHOOL — Wed. Nov. 17.

PROGRAM ..... RELEASE .....

SHORT COURSE: Fall Problems in Poultry Management.

LECTURE NO.7: Marketing Turkeys.

ANNOUNCEMENT: From the tone of our two poultry lessons in the U. S. Radio Farm School it appears that Turkeys are gaining in popularity at this particular season. The first talk is on marketing and our radio schoolmaster brings you the message from the U. S. Department of Agriculture. For more detailed information write for copies of all of the 216 farm school lessons.

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Speaking about turkeys, have you heard about Dave Potter's Thanksgiving gobbler?

Until this year, most of Dave's knowledge of turkeys has been picked up at the dinner table with a carving fork.

But a few weeks ago he decided to buy one on foot and fatten it up for the big Thursday feast.

He locked it up in a chicken coop -- and commenced feeding it well. For two or three days everything went smoothly. Then he noticed that instead of getting fat it was getting thin.

The other day he met me. He told me the whole sad story.

"It looks like that gobbler has just gone on a hunger strike to prevent his execution", Dave concluded.

"No", I said, "You've just overlooked the fact that, as domestic animals go, turkeys are new to the barnyard. All our turkeys came from Mexican wild turkeys originally --- they've been tamed some -- but they've still got a lot of their wild ways".

"What's that have to do with my turkey not eating"? asked Dave.

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PROGRAM ..... RELEASE .....

"Turkeys just don't take to close confinement", I replied, "Give that Gobbler his usual free range -- and he'll get back on his feed".

"How do you fatten them -- with them ranging around"? Dave wanted to know.

"Ordinarily", I told him, "fattening should begin about October first. You should get the turkeys gradually accustomed to more feed. Feed them twice daily morning and night, until about a week before killing time. Then give them all they will clean up three times a day.

"But do not overfeed," I cautioned him. "Turkeys' appetites must be kept on edge so they will keep eating freely. If you give them too much you may throw them 'off feed' for several days".

"What do you fatten them on?" Dave inquired.

"A ration of wheat, oats, and corn will give best results," I explained. "Old corn, if it's not musty, is better than new corn".---

Dave didn't say anything for a moment or two -- he seemed to be thinking -- Finally, he remarked; "I suppose most of the turkey crop is sold alive around Tanksgiving and Christmas. I remember where we used to live it never seemed like holiday time until we saw big flocks of turkeys being driven through the country to the killing stations".

"Yes", I said, "and a lot of farmers ship the birds to market by express-- consigning them to poultry buyers or produce firms. They ship the turkeys in coops that are not more than 16 to 20 inches high, so the birds won't get hurt climbing on top of one another.

"Then farmers living near the city markets often dress their own turkeys and sell them direct to the consumers or retailers. In some sections they market the annual crop of turkeys just before Thanksgiving on a day known as 'turkey day.' On the day before, every turkey grower kills and dresses his turkeys. The next day, he brings them into town for sale to visiting buyers. "When sold in that way", I explained, "turkeys should be dry picked".

Dave wanted to know all about how the killing and picking was done.

I told him that the turkeys should not be fed for at least 12 hours before killing and that they should have plenty of clean, fresh water to drink during that time.

Proper methods of killing and dressing, I said, are essential in producing high-class market turkeys. Then I described how when you are ready to kill and bleed the turkey, you place a cord about its legs and hang the bird

head down -- how with a sharp-edged narrow-bladed killing knife you cut the veins of the throat at the rear edge of the skull to cause free bleeding.

Dave was especially interested in the way you make dry-picking easy. You know how the picker just sticks the knife into the brain of the bird thru the groove in the roof of its mouth. He aims at a point between and a little back of the eyes. A slight twist of the knife--usually causes a convulsive twist of the muscles. They relax and the feathers are loosened. Then you pick the large feathers of the wings and tail, and follow with the body feathers. Then you cool the body thoroughly from 12 to 24 hours and pack for market.

Dave wanted to know about the market demand. I went on to tell him that while most of the turkey crop is disposed of around Thanksgiving and Christmas and while the extra large birds bring better prices at that time, there is a good general demand for medium-sized birds during the rest of the year. The hotel and restaurant trade takes them -- the turkeys being put into cold storage and taken out as needed.

"I suppose some of the quick-growing, thrifty turkeys should be kept for breeders", suggested Dave.

"Sure", I said, "health and vigor in the stock are the foundation of success--- but, look here, Dave, --you've got one turkey for your own dinner -- why are you so interested in turkey markets"?

"I've been thinking," Dave answered, "It looks like to me that under the right conditions, there's money in the turkey business.

Next week our subject will be marketing ducks and geese. Before we leave turkeys, Dave asked me to say something about housing them.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

PROGRAM U. S. RADIO FARM SCHOOL Second RELEASE Wed.Nov.17

SHORT COURSE: Poultry Houses

LECTURE NO. 7: Houses for Turkeys, Ducks, and Geese.

ANNOUNCEMENT: Before we discuss the housing subject we again call your attention to the fact that enrollments are still being accepted in the U. S. Radio Farm School. Yours is a rare opportunity to secure printed copes, prepared in attractive booklet form, of all of the 216 radio lessons on poultry, livestock and dairying, distributed free by the U. S. Department of Agriculture. Now,--- on with the lecture.

* * * * * * * *

Well, folks -- we don't hear of many wild turkeys nowdays.

But, as I was saying, the wild still lurks in the breast of the tame turkeys.

That has its advantages, too---

It helps make turkey raising a simpler proposition ---

That means less expense ----

For instance, our premier Thanksgiving bird has never been so completely domesticated as has the chicken. Yet neither does he need such well-built houses.

As I was telling Dave Potter, during the warmer seasons turkeys find their roosts out-of-doors ----

Of course, it's advisable to provide an open shed with one high roost -- where they can go in stormy weather. In the colder sections, they certainly should have covered open-front sheds. Turkeys can stand considerable dry cold, but they should never be exposed to dampness. But your sheds don't need any interior equipment except the roost -- for the turkey hens make their nests out-of-doors.

You should allow the breeding flock free range throughout the year. If the flock is large, you should allow about one acre as a breeding pen or yard for every 15 turkeys.

But it's the first 5 weeks of a turkeys life that are the hardest. Separate well-built coops should be provided for each brood of young turkeys or poults, as poultrymen call them. It is absolutely necessary to protect the poults from rains and dampness-- The houses should be ample in size and well ventilatated, and should be placed some distance apart.

That other famous Thanksgiving and Christmas fowl, the goose, needs housing similar to that for the turkey.

That is, the old geese need a house only in cold or stormy weather. An open shed, a poultry house, or a barn serves as shelter for geese in the North, and to some extent in the South also.

The young geese need more care. You should provide good-sized brood coops for them, to keep them dry during the rearing season. Keep the coops clean and plenty of straw or shaving on the floor of the house during the winter.

And speaking of dampness, when it comes to ducks, you have amore elaborate housing problem.

Where you just have a few on the farm as a side-line, ordinary hen houses can be used. Give the ducks plenty of sunlight and good ventilation and keep the houses clean and dry.

You can build a good house which will accommodate 200 breeders making it 7 feet high, in front, and 4 feet high in the rear with a shed roof, and 20 feet long.

You should allow from 4 to 5 square feet of floor space for each breeding duck. About one-fourth of the font of the house should be made of glass windows and one-fourth of muslin curtains. A glass window on the east and one on the west end will allow additional ventilation and will help dry out the house.

Ducks keep a house damp -- so provide plenty of litter -- you can change it often -- and carry out the dampness it takes up. Keep all the windows open during the day except in stormy and cold weather.

Ducks, you know, lay their eggs on the floor of the houses, so build the nests like stalls. Make them 12 inches wide, 18 inches deep, with a partition 12 inches high and a 5-inch strip in the front part of the nests.

Besides such open breeding houses, on large duck farms open fattening houses or pens are provided. In these young ducks are kept while being prepared for market. These large duck farms also have brooder houses for the young ducklings. There are usually three for the winter brooding of ducks and the ducklings are moved to each of the houses in turn as they are hatched.

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ANNOUNCEMENT: This concludes the poultry lesson. Remember to write for printed copies of this entire series. Your comment on the U. S. Farm School, sponsored by the Department of Agriculture, will be sincerely appreciated by this station and the Government Radio service, as well.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

U. S. RADIO FARM SCHOOL First Fri. Nov. 19.

PROGRAM..... RELEASE.....

SHORT COURSE: Selection and Improvement of the Dairy Herd.

LECTURE NO. 7: Purebreds, Grades, and Scrubs.

ANNOUNCEMENT: Our first lesson this evening in the U. S. Radio Dairy School is a lively discussion of "Purebreds, Grades and Scrubs". This talk is the seventh of the first short course entitled Selection and Improvement of the Dairy Herd. If you have missed any of the previous lessons notify us in order that you may be sent the complete set in printed form. Now for the scrubs.

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Hal Finney has been boasting about his old scrub cow "Brindle". The other day he claimed she could beat any purebred at the milk pail.

The worse part of it is that he started a lot of talk. Two or three other fellows spoke up and said they knew that scrubs and grades produce more on the average than purebreds. Young John McHenry heard them.

What they said actually worried John. He came to me about it. He was afraid maybe he was making a mistake going in for purebred dairy cattle instead of less aristocratic stock. He wanted me to give him the real figures.

"Well", I said, "I've got a report here which gives the yearly production records of 48,097 purebreds, grades, and scrubs".

"What does it show"? John asked eagerly.

"In the milk production race", I replied, "the purebreds won, the grade were second, and the scrubs got third place".

"Just what I expected", John said, brightening up, "Give me the exact figures -- I want to tell those fellows a few things!"

"Here you are", I said, glancing through the report, "at the age of two, the grades beat the scrubs in yearly milk production by 813 pounds per cow and the purebreds beat the grades by as much as the grades beat the scrubs.

"In income over cost of feed, on the average, the grades beat the scrubs by $15 a year per cow and the purebreds beat the grades by $12 a year per cow."

"That's not bad", commented John.

"The figures run along about the same relative proportions," I said, "until you come to the ten year olds. Then the grades begin overtaking the purebreds".

"How about the scrubs?" asked John.

"They are not overtaking anything", I answered -- even the top notchers of the scrub herd don't seem to be able to overtake either grades or purebreds.

"Hal Finney said that even when purebreds do produce more it costs more to feed them. How about that?" John inquired.

"Yes, that's right", I said. "The records show that at every age the purebreds are more than the grades in dollars worth of feed per cow. And the grades ate more than the scrubs in dollars worth of feed per cow".

"Is that so", commented John in a dull, disappointed tone.

"Sure they did", I declared, "but the cows that ate the most produced the most. And what is more, they had the largest average income over cost of feed. They paid best."

"Give me the figures", said John.

""At the age of six"" I read from the report," 'the purebreds excelled the grades in average yearly production of butter fat per cow by 20 pounds and the grades excelled the scrubs by 36 pounds. On the average the purebreds ate $16 worth of feed more than the grades and $26 worth more than the scrubs. In income over cost of feed the purebreds exeelled the grades by $13 and the scrubs by $33.'"

"How about all ages?" asked John.

"On the average for cows of all ages", I said, "the purebreds produced 7,667 pounds of milk and 296 pounds of butterfat. Their feed cost was $76 a cow a year. On the average they returned $93 in income over cost of feed. The grades averaged 6,999 pounds of milk, 281 pounds of butterfat, ate $61 worth of feed, and returned $83 in income over cost of feed".

John looked disappointed. "The purebreds didn't win by such a big margin after all," he remarked.

"No", I admitted, "The grades and scrubs gave a very good account of themselves".

"It looks like Hal and his crowd were not so far off after all". John said. "How do you account for it?"

"It's really the purebreds that are responsible for the good records of the grades", I declared.

"How's that?" asked John.

"Well", I explained, "grades always have some purebred ancestors. Grades having scrubs ancestry four or five generations back may be well bred. The first cross with a purebred sire makes them half purebred, the next cross makes them three-fourths and the next seven-eights purebreds.

"Besides that", I continued, "You know yourself that grades are culled much more closely than purebreds. Undoubtedly, culling had a great deal to do with the high average production of the grades. And as for the cows tested as scrubs, they were probably the choice of the old scrub herd. But even at that they couldn't hold their own with the cattle of better breeding.

"Just to show you where the arguments of Hal and his crowd would lead you, here are some figures. A scrub cow produced 146 pounds of butterfat. Her daughter sired by a scrub bull produced 126 pounds, and her granddaughter sired by the same scrub bull produced 99.7 pounds. Her yearly record just about equaled the world's record for a goat.

Next week we will talk about cow testing associations, and the effect they have had in improving production. For the next few minutes, however, let's turn to the subject of good milk again and look over the cream separator.

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UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

PROGRAM U. S. Radio Farm School Second RELEASE Fri. Nov.19

SHORT COURSE: Production of Good Milk

LECTURE NO. 7: The Cream Separator.

ANNOUNCEMENT: Our second lesson in Uncle Sam's Dairy School answers many of those often asked questions about cream separators. And here's another reminder that a request to this station for an enrollment card will bring you printed copies of all the radio lessons.

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George Brunton was skimming cream from milk in shallow pans when I was out at his the other day. I noticed that in one end of his milk-shed, he had a centrifugal cream separator. Evidently, he'd quit using it.

"I see you've gone back to the old-time way, George!" I remarked. "If you're going to wait on gravity to pull your milk apart, why don't you use deep setting cans instead of shallow pans? You could separate with less loss of butterfat in the skimmilk and also get a better quality of cream".

"You mean the water dilution method?" George asked.

"No", I said, "that's even worse than the way you're doing it. It dilutes the skimmilk and there's also danger of contaminating the cream by using impure water. But you can get deep setting cans with faucets at the bottom and draw off the skimmilk that way after the cans have stood in cool water for 12 hours. It's a better way than removing the cream from the top ---

"But look here", I continued, "why don't you use your cream separator? That's the best method. You get fresher cream and lose less fat in the skimmilk. Besides the skimmilk is fresher and better for the calves".

"That thing is always out of order", grumbled George, "It don't work right. It's been losing money for me".

I walked over to the separator and began inspecting it.

"Do you clean this machine thoroughly as soon as you use it?" I asked.

"Sure", replied George, "I flush the bowl with water after each skimming and take it apart and wash it every other time".

"Bacteria" I said, "don't grow just every other time. If you want to dodge financial losses, you should clean the machine thoroughly each time it is used".

"What do you mean, 'clean it thoroughly'"? George asked.

"First", I explained, "you should rinse with lukewarm water --all parts of the bowl and the tinware that comes in contact with the milk. Then you should scrub them with a brush in warm water in which soda ash or similar washing powder has been dissolved. Don't use soap or soap powder -- they may leave a soapy film on the surface of the tinware.

"After the scrubbing, rinse the parts thoroughly in clean warm water. Then sterilize them in a steam sterilizer or boil them in water for at least five minutes. Handle them as little as possible and don't use a cloth or dish towl -- the hot utensils will dry themselves".

"Would failure to clean it thoroughly make the separator lose butter fat in the skimmilk"? George inquired.

"It might", I said, "A cream separator, you know, is one of the most delicate machines in general use on the farm - - -.

"Your machine seems to set perfectly level and is tightly fastened on a good solid foundation --- that's necessary to keep the frame from vibrating. When the machine vibrates the bowl doesn't run true and the bearings wear quickly. Then the separation of the cream from the milk is not nearly so complete as it should be".

"Another thing, that causes unequal wear on the bearings and gears, is turning the crank with a jerking movement", I went on to explain, "You should run your machine according to directions. Keep the bearings and gears clean, free from grit, and well lubricated with a good oil. If you don't use a speed indicator, you should time the revolutions of the crank by a clock or watch and keep an even pressure on the handle throughout the revolution.

"A cream separator does its work most effectively only when run under proper conditions. It will not skim clean when it is run too slowly; as the centrifugal force developed is not enough to separate all the cream from the skimmilk. The vibration or wabbling of the bowl keeps the milk so stirred up that the cream doesn't separate normally. When the bowl parts are bent, dirty, or not properly assembled, the machine can <u>not</u> work properly".

"How about the temperature of the milk? That has something to do with the way the milk separates". George suggested.

"Sure", I agreed. "The lowest temperature for the best separation is 90 degrees Fahrenheit. When milk is cooler than that, it is more sticky. As a result the movement of fat globules through the skimmilk, and the flow of cream through the cream outlet is checked. This results in a loss of fat in the skimmilk, and a somewhat smaller quantity of cream, containing a higher percentage of butterfat. During the winter, if the separator is in a very cold room, the bowl should be warmed by running warm water through it, so that the first milk that enters will not be chilled. When through separating, you should run a small quantity of skimmilk through the separator. This flushes the last of the cream from the from the bowl".

I told George, as I'm telling you, it pays to handle the cream separator carefully. You can regulate the richness of the cream, to a large extent, by adjusting the cream screw, provided for that purpose. There are certain variations in the fat test of cream, however, that are bound to occur, even when you run the machine with the best of care. For instance, there are seasonal differences. And other things being equal, the richer the milk run through the separator, the richer the cream will be.

But when you are separating a small amount of milk, remember, that the flushing of the bowl with skimmilk is an especially important factor affecting the test of the cream.

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ANNOUNCEMENT: This brings to a close, Uncle Sam's Dairy Farm School. This is a regular Friday program each week. The Livestock farm school is at the same period on Monday and the Poultry lesson on Wednesday. In two weeks we are start- the second series of short courses on these three subjects. Those who were late in starting or who have missed some of the lessons, should register at once and become elegible to receive printed copies of all radio talks. There is no charge for this service.

UNITED STATES DEPARTMENT OF AGRICULTURE
Radio Service
OFFICE OF INFORMATION

U. S. RADIO FARM SCHOOL
PROGRAM..... First RELEASE..... Mon. Nov.22

SHORT COURSE: Livestock Breeding.

LECTURE:NO. 8: Breeding Goats

ANNOUNCEMENT: We are calling together our students of Uncle Sam's Livestock School, at this our regular meeting time, for a lesson on "breeding goats". Whether or not you deal in this particular class of livestock you'll be interested in what our schoolmaster has to say on the subject.

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"Old Billy Goat was feeling fine;
Ate six red shirts, right off the line --
That made Sal mad. She spanked his back.
Then tied him to the railroad track!
Along came the train -- about six hours late --
Alas, poor Bill, seemed doomed by Fate --
He gave one bleat of fright and pain;
Coughed up those shirts and flagged the train!!"

That may be an atrocious old song. It pictures the American comedy goat of the old city back alleys. Yet a lot of folks still think of goats that way. They regard them as odorous, tin-can eating subjects of ridicule--animals of no importance.

Of course, they may know that the famous Kashmir shawls, and other fine fabrics of the old Orient, were made from the fleece of Angora goats. But they fail to realize that these desert and brush-eating animals graze by millions in the United States. They also overlook the fact that Pullman car upholstery, portieres, robes, rugs, braids, artificial furs, and men's clothing are now being made from mohair from Angora goats.

Because they seldom see goat meat, as such, listed on menu cards they have never discovered that goats are sent to market for meat by tens of thousands every year.

Although many people in this country have heard that in some of the European countries milk goats are regarded as the "poor man's cows", they may not know that a number of goat dairies have been established in this country.

You out there who are listening in, however, should know that America imports large quantities of goat products. But there are millions of acres of land in the United States adapted to mohair-goat grazing. The milk goat is also adapted to this country and the industry is likely to become of greater importance every year.

The fact that a goat will supply enough milk for the average family and can be kept where it is impossible to keep a cow is beginning to appeal to many people. Some folks feed the baby goat milk. Then when they travel, they just take the goat along -- so baby don't have to change milk.

There are many breeds of milk goats, the principal ones being the Toggenburg and Saanen, named after the valleys in Switzerland in which they were developed.

The Toggenburg breed varies in color from a light fawn to chocolate with white markings. These goats are generally hornless. Bucks weigh from 175 to 210 pounds and does from 115 to 135 pounds.

The Saanen goats are pure white or cream colored. The bucks weigh from 190 to 225 pounds and the does from 125 to 160 pounds.

The Nubian, is another breed found quite extensively in the United States. It is native of Nubia, Upper Egypt, and Abyssinia. It is one of the largest breeds and is noted for the rich quality of the milk.

But it's hard to import goat breeding stock now owing to animal diseases abroad that have resulted in quarantine restrictions. That makes the so-called common or American goat more important. Purebred bucks of the Swiss breeds can be successfully bred to common American does for the production of milking stock. These crossbred does, carefully selected after the second or third cross, closely approach the purebred stock in the production of milk and butterfat. The color, marking, and breed conformation are also well set after the second or third cross to purebred bucks. By this method, you can develop herds of uniform and high-producing does in a short time.

But when it comes to Angora goats bred for mohair and meat but not for milk, the same system doesn't pay. In mating common straight-haired does with Angora bucks, it takes several crosses to put on a fleece of satisfactory market value.

As a big goat breeder said to me not long ago, "The hair from a herd of high-grade Angora does and their kids will repay the original purchase price long before any market hair at all can be produced by grading up from common goats".

Angora goats in this country, you know, are produced in largest numbers on the semi-arid ranges in the Southwest. The does and kids under range conditions shear an average of $3\frac{1}{2}$ to $4\frac{1}{2}$ pounds of hair in two clips during the year. The wether stock produces from 4 to 5 pounds. But breeders' herds sometimes clip twice this much.

Range Angora bucks when mature should weigh from 125 to 175 pounds; bucks at 18 months of age 80 to 90 pounds; finished mature wethers, 125 to 200 pounds; grown does, 65 to 90 pounds; 18-month does, 50 to 70 pounds.

Opinions vary among breeders as to the relation of the size of the goat to the vigor and quality of the hair. It has often been found that extremely large goats have comparatively coarse hair. Reasonable size is generally associated with greater vigor than extremely small size. The largest goat consistent with fineness of fleece is the most profitable type.

Angora goat ears should be drooping; "fox ears" are objectionable. The color should be white in the kids as well as in the mature goats. "Red Kids" although they ultimately shed out and produce good mohair should be sold for slaughter. Even the practical ranchman who has only grade does objects to bucks from strains that produce off-color kids.

And remember this, registered bucks with distinctive characteristics and lineage count in the goat business as well as in other livestock business. To fix a desirable type in goats and in mohair is a problem of years. It demands a high degree of discrimination and perseverance in selective mating.

So much for the goats on the one hand. Now let's turn to the sheep on the other, and talk a little about feeding ewes for lamb production.

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UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

PROGRAM U. S. Radio Farm School Second RELEASE Mon. Nov. 22.

SHORT COURSE: Feeding Farm Animals.

LECTURE NO. 8: Feeding the Farm Flock of Sheep

ANNOUNCEMENT: The next lesson is the last of our short course on "Feeding Farm Animals". -- The subject is Feeding Farm Flock of Sheep. A single request for enrollment in the U. S. Radio Farm School will bring you attractive printed booklets of all 216 lessons conducted this fall and winter from the U. S. Department of Agriculture.

* * * * * * * * *

I was talking sheep feeding with Dan Burnham not long ago. Dan seemed especially pleased with the fall pastures out his way.

"That's all right", I said, "Keep your eye on the grass -- but keep your hand on the sheep's back".

"You mean check up on their condition by feeling the bone"? Dan asked.

"Certainly", I replied, "Never let ewes which are in lamb lose weight. There's danger of waiting too long to start feeding -- especially in open, wet, fall seasons. A rank growth of soft grass may look like good feed. But it's the actual condition of the ewes that counts. The profits from the lamb and wool crop depend largely on the methods of feeding the breeding ewes".

"What's the best feed to get the flock through the winter in good shape?" he inquired.

"The feeding should be such," I told him, "as will produce the most vigorous lambs and at the same time keep the wool in good condition".

"That's not telling me much", he remarked.

"Well", I said, "in regions where the winters are open a heavy stand of well-cured blue grass will help very much. Wheat or green rye pastures during the late fall give considerable succulence and furnish exercise for the flock. In the South, velvet beans are found to be a great help in carrying the breeding ewes into January".

"But how about the dry rations for winter"? Dan insisted.

"Legume hays, straws, and cornstalks usually form the main part of them, I answered. Good quality clover, alfalfa, soy bean or cow-pea hay may be used as the sole feed until near lambing time.

"How much would you feed?" he questioned.

"For ewes weighing less than 150 pounds", I said, "3 to 3½ pounds of these legume hays are enough".

"In case I use straw instead of hay, is rye or barley all right"?

"Oat and wheat straw are better", I replied, "the beards on the rye or barley are likely to give trouble. Cornstalks placed where the ewes can eat off the leaves may be used as part of the roughage. But if you make up a ration largely of either cornstalks or straw, you should feed a nitrogenous concentrate in addition".

"What do you mean, 'nitrogenous concentrate'?" Dan asked.

"Cottonseed meal or linseed meal will do", I told him. "One-quarter to one-half pound a day is about the right amount. Where the ewes can run on fall wheat or rye during the winter months, they also need a concentrated feed to supplement the pasture. One-half pound of cottonseed contains enough protein a day for a breeding ewe, but one-quarter pound of cottonseed meal a ewe a day and a selection of other feeds will be better."

"How about feeding sheep timothy hay"?

"Don't do it", I advised, "timothy is not a good sheep feed.

"Could I use silage"? Dan inquired.

"Sure", I said, "succulent feeds such as corn silage and roots help keep the ewes in good health".

"I'm glad to hear that", Dan remarked, "the use of silage will cut my feed costs".

"But remember", I warned him, "you can't use the silage safely without also using hay. It also ought to be from well-matured corn and you should be very careful not to feed the sheep any spoiled, frozen, or mouldy silage".

"How much should I feed"? he asked.

"Not more than three pounds a head a day", I said. And as for roots, particularly turnips, feed them sparingly to the bred ewes until after lambing"

"You said awhile ago that legume hays may be used as the sole feed until near lambing time," Dan reminded me, "What should I feed them then?"

"About two or three weeks before lambing begins", I explained, "you should start the ewes on mixed grain. Gradually increase the quantity until you are feeding about one pound a head daily.

"For the first 3 or 4 days after lambing", I continued, "you should reduce the succulent feed and grain somewhat in order to prevent scouring of the lambs. Then you should increase it again gradually and continue feeding it until the pasture is plentiful in the spring and the grass ceases to be washy.

"When the lambs are about two weeks old, you should provide them with grain in a creep. Keep this up until they are ready for market. Bran and crushed oats are a very satisfactory feed to start them on. After they are eating well, cracked corn may be added to the mixture. Then you should gradually reduce the bran until it is eliminated entirely from the ration.

"After the lambs have been weaned, you can turn the ewes on short feed for a few weeks in order to dry them up.. It is also well to have them rather thin -- but not unthrifty -- just preceding the breeding season.

"About two weeks before the rams are to be turned in, you should move the ewes to good pasture and bring them to medium condition as fast as possible. This gaining in thrift and weight increases the number of twin lambs in the flock.

"Young tender growth of alfalfa or clover is not satisfactory for this purpose. It makes the ewes difficult to get in lamb. Pastures of blue grass, timothy or soy beans are among the best for "flushing" ewes at breeding time".

UNITED STATES DEPARTMENT OF AGRICULTURE
Radio Service
OFFICE OF INFORMATION

PROGRAM U. S. RADIO FARM SCHOOL First RELEASE Wed. Nov. 24.

SHORT COURSE: Fall Problems in Poultry Management

LECTURE No. 8: Marketing Ducks and Geese

ANNOUNCEMENT: The first short course in the U. S. Farm Poultry School comes to a close at this period. The eighth of the series of lessons on "Fall Problems in Poultry Management" is devoted to a short discussion on "Marketing Ducks and Geese". An enrollment in the school will bring you free printed copies of all talks from the U. S. Department of Agriculture.

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"Speaking about Thanksgiving and Christmas birds," Wallace Helm said to me last week, "why don't you say something about geese?"

"That's right", I agreed, "roast goose is a famous holiday dish --- especially with folks from the old countries. But what do you want to know about geese?"

"How to get them ready for market -- so as to get the best prices", Wallace answered.

"This is the best time of the year", I said, "and the best markets are the big cities where there is a large foreign population. There is also a limited demand for goslings from 12 to 16 weeks old, which are forced for rapid growth until they reach about 10 pounds".

"What's the best way to fatten them?" he inquired.

"Pen fattening," I replied, "is the method best adapted to small lots of geese on the average farm. You shouldn't put more than 20 to 25 geese together in a pen".

"But what do you feed them?"

"Give them a feed of corn with some oats or barley twice every day and a moist mash once a day", I told him, "The mash should consist of 1 part shorts and 2 parts corn meal.

"If possible keep the pens partly dark and disturb the geese just as little as possible".

"How much weight will they pick up that way? asked Wallace.

"From 4 to 6 pounds," I replied.

"That's pretty good," he commented, "but how about this noodling or hand feeding you hear so much about?"

"That's designed to produce the highest-quality geese. You stuff the large geese with noodles for 3 to 4 weeks."

"How do you go about it?" insisted Wallace.

"You just sit on a box in the pen and hold the goose between your legs and put the noodles into its mouth one at a time. At first you feed 3 to 5 noodles three times a day. But you gradually increase the feeding until you are giving it 6 or 7 noodles five times a day.

"And the noodles are made of what?" he asked.

"About equal parts of scalded meal, ground oats, ground barley and ground wheat or wheat flour. You salt as for bread. Then you put the mixture through a sausage stuffer, cutting it into pieces 2½ by 3 inches long. You place these pieces on a wire rack which stands about 1½ inches above the bottom of a wash boiler. Then you boil them for 10 to 15 minutes or until they float.

"After boiling, you dip the noodles in cold water and roll them in flour to keep them from sticking together. Just before you feed them to the goose, you pour hot water over them to make them slippery and to keep them warm."

"I think I'll try that," Wallace said, "but speaking about fattening rations -- what would you use for ducks?"

"Well," I explained, "the large commercial growers also rear ducks on the intensive plan. They force young ducks to grow fast and market them at from 8 to 12 weeks old as "green" ducks, when they weigh from 4½ to 6 pounds. When the young ducks are 7 or 8 weeks old they place them on the fattening ration."

"What's a good ration to use," asked Wallace.

"Four parts by weight of cornmeal, 2 parts bran..2 parts meat scrap,

2 parts middlings, and 1 part green feed.

"When ducklings are well grown and have reached weighs of 5 to 6 pounds," I added, "they are in prime condition and should be marketed promptly. If you hold them until they get well started molting the first feathers, they are apt to lose weight. Usually ducklings are marketed within one week after they begin to molt. When the duckling's body has a good smooth breast so that the breastbone can not be readily felt the bird is ready for killing."

"When do they bring the best prices?" inquired Wallace.

"Usually from March 1 to May 1," I said, " Prices drop somewhat during the period of heaviest shipments in the summer months, but they go up again in September when the duck shipments fall off.

"However, as the farmer has no special market most of the farm raised ducks are held until fall and then sold alive as green ducks. If there is a special local demand for ducklings, it may pay the farmer to dress and deliver them."

"You dress them for market about the same way you do chickens, don't you?" Wallace asked.

"Ye-es," I answered, "except on the average duck farm, the ducks are scalded instead of dry picked. In scalding you ought to keep the water at a temperature just below boiling and be careful to keep the head and feet of the ducks out of the hot water so you will not discolor them. The birds should be cooled promptly and thoroughly. Then they can be packed in ice for shipment."

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

PROGRAM.....U. S. RADIO FARM SCHOOL.....First RELEASE Fri. Nov. 26.....

SHORT COURSE: Selection and Improvement of the Dairy Herd.

LECTURE No. 8: Cow-testing Associations.

ANNOUNCEMENT: The U. S. Dairy Farm School, presents at this time the last lesson, of the first short course on "Selection and Impretement of the Dairy Herd." If you have missed previous talks write this station for the complete series.

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We lost one of the members of our cow-testing association not long ago. The other day a bunch of us called on Howard D. McCain to try to get him to take the vacant membership. You know, McCain is one of the most successful dairymen in this section -- but he's not much for working with anybody else.

Well, Dr. Black, Joe Anson, Henry Porter, and myself went out to his house to get him to join. He invited us in. When we were all seated around, Howard D. leaned back in his chair pompously and asked what the meeting was all about.

I explained that we wanted him to go in with 25 othersof us dairy farmers to hire the tester to keep production, feed,and income records of our dairy cows.

"The tester", I went on, "spends a whole day on each farm once a month. He weighs the feed night and morning, and takes a sample of each cow's milk night and morning. He tests the mixed sample of the two milkings of each cow, multiplies the daily record by the number of days in the month, and enters the monthly record in the farmer's herd book".

"What good would that do me"? Howard D wanted to know.

"He will talk over the feed cost and production records of your cows with you", I replied. "Together you can decide what kind of feed to use and how much each cow should have in order to increase your profits", also which cows should be kept and which should be sent to the butcher".

"I've been deciding those questions by myself all these years", said Howard D. "I've done pretty well --- What have your cow-testing associations ever done anyway toward getting more out of a cow?"

All four of us started to speak up at once. Joe Anson was quickest. "It looks like some dairymen certainly think they pay--the first cow-testing association in the United States was started in Newaygo County, Michigan, Twenty years ago. On the first of January this year, there were 777 active cow-testing associations in operation in this country. They had 330,000 cows on tests. They--"

"I know testing pays", broke in Henry Porter, "I'm getting an average of 50 pounds of butter fat per cow a year more from my 12 cows than I did before."

"Yes," put in Dr. Black, "the first year I belonged to the association: my herd of 10 cows produced an average of 279 pounds of butter fat. My average income over cost of feed was $37. This last year with a herd of 17 cows I received an average of 380 pounds of butterfat. My average income over cost of feed was $82 a cow".

"These gentlemen are right", I added, "if all the cows in the country produced as much as the cow-testing association cows we would not need so many of them".

"I'd like to see the records for the whole country", objected Howard D. "An association here and there doesn't mean much to me".

"I have the figures", I said, "The records of cow-testing associations tabulated before 1920 showed an average production of 6,077 pounds of milk and 247 pounds of butterfat. Even that was about 50 per cent above the average for all dairy cows in the country. But since then the average production has been increasing. A tabulation of 64,169 yearly individual cow records for the testing years ending 1924 and 1925 showed an average milk production of 7,272 pounds and an average butterfat production of 282 pounds. That's a big gain in a short time".

"You don't mean to tell me that the records will keep going up indefinitely at any such rate!" Howard D. commented sarcastically.

"Of course, not", I replied, "in a well-managed cow-testing association the gain in average production per cow is fast during the first four or five years. After that, it's less rapid. It's much easier to raise production from a low level to a higher level than to raise it from the high level to a still higher level".

"Certainly!" declared Howard D.

Then Joe Anson remarked; "When the first Minnesota cow-testing association was started at Albert Lea in 1910, the lowest producing herd on test consisted of 30 cows. They had an average butterfat production of 112 pounds. Four years later, the herd had been reduced to 20 cows. But those twenty each produced on the average 228 pounds. With two-thirds as many cows, the herd was producing one-third more butterfat".

"I'll admit", said Howard D. reluctantly, "cow-testing associations are a good thing for the low-producing herds -- but mine's not that kind."

"All right", answered Joe, "the records of that same association show that the highest producing herd in the association was made up of 22 cows. Those cows produced an average of 311 pounds of butterfat a cow. Four years later the same herd had 25 cows with an average butterfat production of 400 pounds. That's a gain of more than 28 per cent".

Seeing that Howard D. was wavering, I added, "certainly, testing pays regardless of the quality of the herd. It enables the owner to cull his herd intelligently, to feed according to known production, and to select bulls more intelligently".

"'Bulls'"? repeated Howard D. "I thought you had a cow-testing association."

"Heretofofe", I said, "Cow-testing association work has been confined largely to testing cows. Now it is testing the bulls also through the records of their daughters. It takes a little longer to obtain the records that condemn or approve the sire, but they are just as definite and exact in the conclusions you can draw from them.

"You mean to say that cow-testing substitutes certainty for guess-work in choosing either cows or bulls", he said.

I nodded.

"Well, gentlemen," he said, "I guess you can just put down the name of Howard D. McCain as a member".

With this little talk on cow-testing associations we conclude the short course on dairy herd selection. But now let's turn from the herd to the product, and talk about caring for milk in the home.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

U. S. RADIO FARM SCHOOL Second Fri.Nov.26

PROGRAM..... RELEASE.....

SHORT COURSE: Production of Good Milk

LECTURE No. 8: Caring for Milk in the Home.

ANNOUNCEMENT: This lesson, also is the last of the series "Production of Good Milk". The next short course starts a week from this time. Complete printed copies of all lectures may be secured by writing this station or the Department of Agriculture which sponsors the U. S. Farm School.

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Speaking about caring for milk in the home, I had a little experience in that line during the rain the other day. I was driving in an open car. In order to get out of the rain, I stopped in Ben Price's place. Then Ben and his wife insisted that I stay for supper.

But before supper time, Mrs. Price discovered that the cream she had counted on using had turned sour -- just why, she didn't know.

"If it had thundered during the rain, I would blame it on that", Ben remarked.

"You know better than that, Ben," I said. "Thunder never soured any cream or milk in this world. Bacteria are what do it".

Ben hustled out to do a few chores and nothing more was said about the cream at that time. Pretty soon he brought in the evening's milk.

"Gimme something to put this in", I heard him say.

"Just a minute", his wife answered.

"That's all right", he said, "I'll just use this crock here".

"That one has a rough place in the bottom", she warned.

"What's the difference", -- Ben replied, "I'm wiping it out well".

Then I heard him go into the pantry and set down the crock of milk.

About that time, Mrs. Price called us to supper. A little later the

the talk drifted back to the sour cream.

"What do you suppose could have been the trouble"? Ben asked.

"Since you ask me", I replied,"Iwouldn't be surprised if the milk you just brought in would also turn sour".

"Why's that"? Ben demanded in surprise.

"From the way you handled it", I explained, "it probably has millions of bacteria in it already -- then you put it in the pantry which opens into your heated kitchen -- the temperature will be about right for the bacteria to multiply fast".

"Maybe I should have put it in a cooler place", he admitted, "but what else was wrong with the way I handled it?"

"In the first place", I said, "you just picked up the first utensil which came handy. You should have special utensils for milk and cream which you use for no other purpose.

"Then", I continued", you picked a crock with a rough place in the bottom. Milk utensils should have smooth surfaces free from seams or cracks which might shelter bacteria.

"Didn't I warn you", Mrs. Price said to Ben.

"They should also be made of material which will stand heat in preparing them for the milk", I went on, "and should be of a type that is easily covered.

"After being used, milk utensils should be rinsed in cold or lukewarm water and then thoroughly scrubbed with a brush in hot water containing some good washing powder -- but not a soap powder. You wiped out that crock with a rag. Rags should never be used in washing milk utensils -- they tend to smear grease instead of loosening it. After you wash milk containers you should scald them with boiling water or actually boil them in water. Then place them upside down in a protected place until you use them. If you care for your milk containers that way, the battle of keeping the milk is half won".

"You've got the goods on me, professor", smiled Ben, "I know you're right -- but a fellow will get careless".

"It's dangerous to get careless with milk", I replied, it's too easily contaminated. You probably also know that the first thing to do to milk as it comes from the cow or cream as it comes from the separator is to cool it thoroughly. Setting it in a cold place is not enough; unless that place is cold

water, preferably running water, or ice water. Even then the milk should be stirred while cooling. After you cool the milk or cream, you should place it in the coldest possible place above freezing until you get ready to use it. If you don't have a refrigerator or ice, running water from a spring or well makes the best substitute. I know a man who just puts a covered barrel in the stream between his spring and the stock tank. It serves as a first-rate storage place for perishable food.

Down on the old home place when I was a boy, we used to put the milk in a tight can and hang it in the cistern. Other folks I knew used the well. Still others used caves and cellars. A handy way of storing milk and cream for family use in cool weather is to build a cold cupboard on the back porch or outside the kitchen window. A tight rain-proof box fitted with a door works fine in cool weather".

"I think I'll fix one of those", commented Ben.

"Another thing", I said, "after you have poured out some of the milk for use. Don't pour any part of it back again. Keep it separate to avoid contaminating the rest".

"You haven't told me a thing I didn't already know", remarked Ben.

"Yes", I agreed, "but most of us need to be reminded even more than we need to be informed. -- but if you were going to take that milk out of the pantry to put it in a cooler place, don't let me stop you".

UNITED STATES DEPARTMENT OF AGRICULTURE
Radio Service
OFFICE OF INFORMATION

PROGRAM U. S. RADIO FARM SCHOOL RELEASE Mon., Nov.29.

SHORT COURSE: Animal Health and Sanitation.

LECTURE NO. 1: Origin and Cause of Disease.

ANNOUNCEMENT: We're starting another Livestock Short Course. For the next eight weeks we're going into different phases of Animal Health and Sanitation. The origin and cause of disease will be discussed at this time by our radio schoolmaster, who voices the opinions of U. S. Department of Agriculture authorities on the subject.

(NOTE In this lecture the characters are: The Professor himself; and Cole Henderson, who speaks with a slightly nasal tone).

(Two or three raps -- as if on desk)

THE PROFESSOR: (Loudly) Students will please find seats! The class will be in order!!

(Aside - as if to an assistant near his desk) How about that map, Brown?

Did you bring it? --- No? --- That's all right -- we'll get along without it.

(To Class) Probably the greatest event in the history of sanitation took place on a farm.

About fifty years ago, the origin and cause of disease was a subject of bitter controversy.

For many years scientists equipped with microscopes had been discovering tiny forms of plant or animal life, associated with disease conditions. Most scientists held that these microscopic forms of life were the result rather than the cause of disease. They thought that these bacteria, came into being in some mysterious manner, from lifeless material -- that they originated within the body of the infested animal.

Louis Pasteur, a French chemist, denied this. A series of investigations had convinced him that life can come only from life.--- that these microscopic forms or life came from others like them -- and they were really the principal cause of disease.

He had traced a disease of silkworms to infection by bacteria and had shown that when disease-free caterpillars were kept free from infection they did not have the disease.

He had also investigated the souring of wine which threatened the French wine industry. He found that this souring was caused by bacteria, and that it could be prevented by heating the wine so as to kill off the bacteria. In other words, he

discovered the process of pasteurization which was later applied to milk.

Pasteur had also investigated chicken cholera. He had obtained bacteria from chickens with cholera, grown these bacteria in tubes in his laboratory, and by inoculating healthy chickens with these bacteria had transmitted the disease to them. During his experiments, he accidently discovered that when the chickens were inoculated with a weakened culture of the cholera bacteria they became immune to the disease.

He then applied the same principle to the investigation of anthrax, the deadly disease of cattle, sheep, and other animals. He claimed this could be conquered in the same way.

His claims were assailed on every side. The old controversy as to the origin of disease was fanned into higher flame. He was challenged to a public demonstration of his discoveries. The Agricultural Society of Melun offered to supply the sheep.

Pasteur accepted the challenge. On May 5, 1881, he began the protective treatment of twenty-five sheep. Then on May 31, before a crowd of 200 farmers, scientists, government officials, and newspaper men, he inoculated the twenty-five treated sheep with the anthrax bacteria marked them and predicted that they would survive. He inocubted twenty-four others and a goat and predicted that within a few days they would all be dead. The meeting then adjourned.

On June 5, the same crowd gathered to see the results. The 25 vaccinated sheep were alive and healthy. The unprotected sheep were all either dead or about to die. As Pasteur appeared on the farm, the crowd burst into applause.

That demonstration on that farm that day inaugurated a new era in preventige medicine. It not only showed in a striking way that certain bacteria cause anthrax and that it can be transmitted from one animal to another. It furnished the key for numerous other discoveries which have shown that bacteria are the common causes of many diseases.

But while the organisms that cause such diseases as tuberculosis, anthrax, tetanus, and contagious abortion have been revealed, the highest power microscopes have so far failed to show the life forms which are responsible for other diseases such as hog cholera and foot-and-mouth disease. A poisonous substance called a virus is, however, known to carry these diseases from infected animals to other susceptible animals.

On the other hand, there are animal parasites, such as worms, mites, and other pests, which cause disease conditions either directly or indirectly, and many of which are large enough to be seen without the aid of a microscope, --- (As if interrupted) Just a minute. I'll answer your question. The invisible and visible enemies of farm livestock are legion. In dealing with animals showing disease symtoms the first important step is to find out what disease they have. Call in a "graduate" veterinarian. Home doctoring of infectious diseases may cause much suffering among animals and permit the malady to spread. ---- (As if interrupted) Now, Henderson, what was it?

COLE HENDERSON: What's the idea of quarantines?

THE PROFESSOR: Most diseases of bacterial origin have an "incubation period" during which they develop without the animal showing symptoms. On that account, it is a good idea to quarantine any new livestock brought on to your farm from outside sources. Keep them separated from your other livestock long enough to permit any suspected diseases to develop in case they may be present. Keeping animals separated so as to prevent the spread of contagious or infectious disease is what we mean by quarantine.

COLE HENDERSON: How about Federal and State quarantine regulations?

THE PROFESSOR: That's a subject we'll take up next week. It's also a subject you should be familiar with, if you intend to ship livestock?

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

PROGRAM U. S. RADIO FARM SCHOOL RELEASE Second Mon., Nov.29

SHORT COURSE: Livestock Barns and Shelters.

LECTURE NO. 1: Planning Buildings for Livestock.

ANNOUNCEMENT: Before we start planning livestock buildings we're going to request all new students, that is those who have not handed in their names to do so at once. Copies of the 48 lessons that have been given will go forward to you without delay from the U. S. Department of Agriculture and the 96 lessons to follow will be supplied in printed form at the conclusion of each short course. The schoolmaster will now take the desk.

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(The characters in this lecture are: The Professor himself; Cole Henderson, who speaks with a slight nasal voice; Bob Moore, who talks with a drawl; and Al Coates, who talks in a loud blustery manner.)

(Two or three raps -- as if on a desk.)

THE PROFESSOR: Let's have a little order, please! We don't want any confusion when we are planning buildings for livestock. A barn is not a hit-or-miss affair. That is, it should not be. Of course, a lot of barns are just barns.

But if you are going to build a barn -- you probably have in mind some purpose for it -- some particular purpose. The building ought to fit the purpose. Then, of course, you want to make it so it will be convenient, and will save work. But you don't want to spend any more on it than you have to. Yet you want it to have a good appearance -- and you want it to last. If you get all those things -- you'll have to do some careful studying.

Temporary shelter naturally needs but little consideration. That is, unless you plan to make the temporary shelter the beginning or nucleus of a complete structure -- one that is to be developed as conditions warrant -- or as you can get hold of t[illegible] at case, you should keep the final result in mind when you plan and [illegible] you should give it the same careful thought as you would the complete project.

But there are many other things to be considered in planning a stock barn or shelter -- Bob Moore, what would you say is the first thing to consider?

BOB MOORE: (In a drawl) - I'd say -- location -- comes first.

THE PROFESSOR: It certainly does. The location of any building for stock should be chosen with consideration for good drainage and its relation to other buildings, yards, lanes, fields, roads, convenience in handling the stock, its place in the routine of chores, fire hazards, and exposure to weather.

The climate and the kind of stock to be housed determine the type and character of the building -- how tight and how warm it should be --- Mr. Coates, what should determine the size of the barn? ---

AL COATES: (In a blustery voice) Number and kind of stock. ---

THE PROFESSOR: Yes. That and the general arrangement and the details of facilities and equipment you expect to have in the barn.-- But let me caution you -- don't put all your eggs in one basket -- that is, don't put too many of one kind or too many kinds of stock under one roof. In case of disease or fire, it would probably go hard with you if you did. --- Henderson, tell us something else you think important to consider in planning a barn.

COLE HENDERSON: (In a slightly nasal voice) I'd figure on what kind of material I was going to use to build it.

THE PROFESSOR: Yes. Choice of material is important. That's largely a matter of relative availability of different materials and the building costs. And, of course, durability or suitability for the kind of barn you want to build should be considered.

All buildings should be designed and equipped so they may be cleaned readily and thoroughly. You should keep that in mind, in selecting the type of equipment, the kind of flooring, and other surfaces in the barn.

You should also make provision for supplying good water and for removing manure and other waste.

Plenty of sunlight is essential to the health of animals. It also makes working in the building easier. Windows should be placed so as to distribute the light as uniformly as possible.

Equipment should be chosen with regard to its ability to stand wear and its suitability for the work in which it is to be used.

The matter of fire hazards should have careful thought. Provision should be made to prevent fires happening. And to prevent the spread of fires in case they do occur.

COLE HENDERSON: (In a slightly nasal voice) Professor, how about ventilation.

THE PROFESSOR: That's right, Henderson. Proper ventilation is of great importance -- particularly in dairy and sheep barns, hog houses, and poultry houses. The health of the animals affects production. And health is largely dependent on keeping animals comfortable and giving them plenty of fresh air.

In cold climates, you have to use insulation. If the building will not keep out the cold -- the body heat of the animals is not enough to keep it at a comfortable temperature.

The framing and other structural details should be so designed as to provide the necessary strength with the least quantity of material. Unnecessarily heavy timbers and bracing add to the cost. On the other hand, if you do not have enough material or if you use the material improperly, it may result in failure and damage greatly in excess of the cost of additional material which would make the building extra strong and safe.

Keep the cost of a structure within a sum upon which the stock can make a return. This will not admit of frills and unnecessary ornamentation. But if the livestock branch of farming is well managed, there is no reason why stock buildings should not be of good materials, well built, and well equipped.

Next week we'll go into this subject of durability and economy in barn construction. But in this course, I want you fellows to take part. If you have any questions, don't hesitate to speak right up. You of our bigger class who are listening in by radio -- write down your questions and mail them in. That applies not only to questions. If you have any concrete ideas or have worked out any convenient or economical arrangement of equipment or what not let us know about it. This is your class and we want all of you to take part.